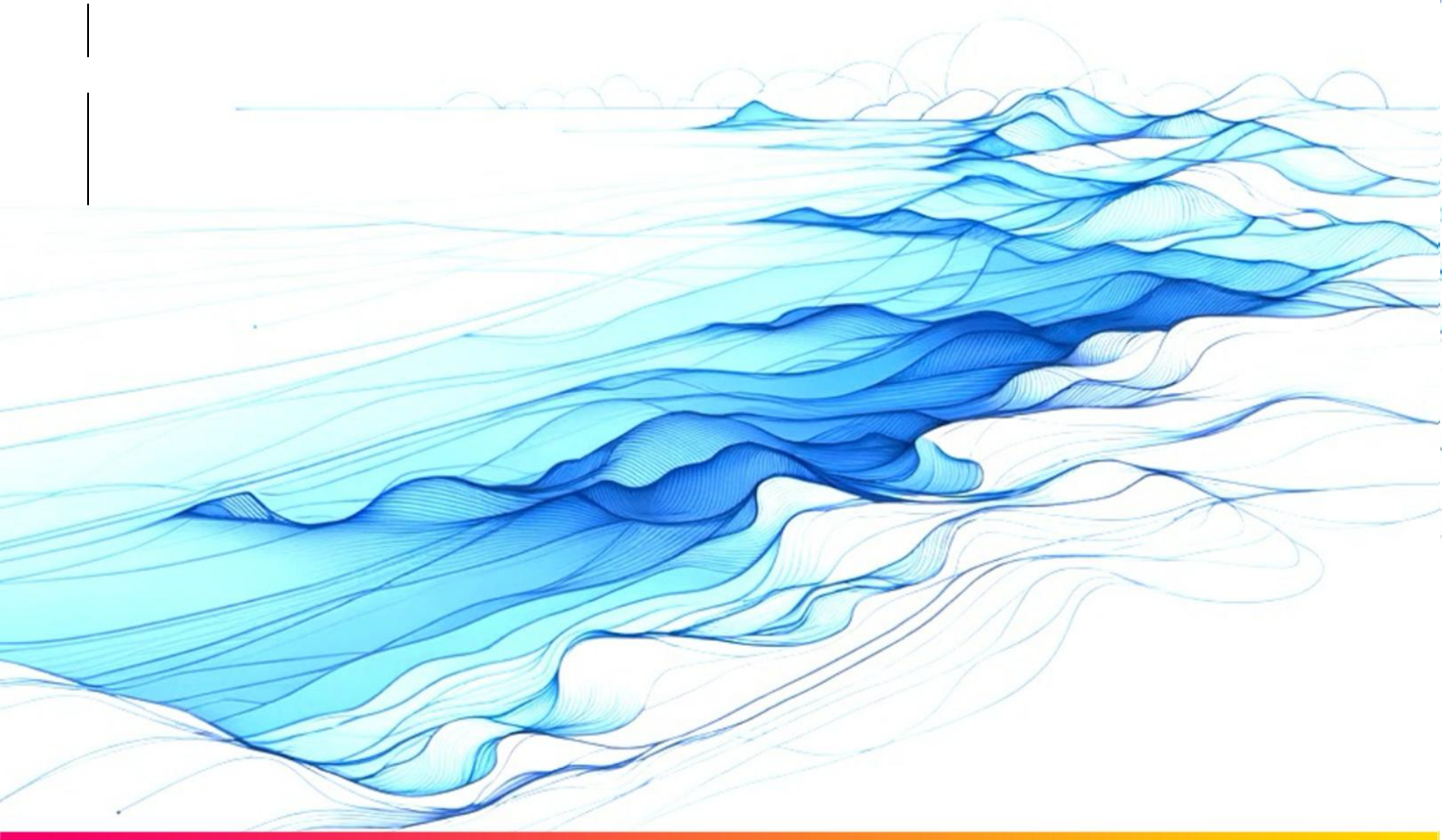


REGIA MSS

Environment Plan

Public

November 2024

Executive Summary

The Regia Marine Seismic Survey (**Regia MSS**) Environment Plan (**EP**) is a detailed set of documents that explains how the environmental management approach taken by CGG Geophysical Services Pty Ltd (**CGG**) complies with the prevailing regulatory requirements. The regulations allow the National Offshore Petroleum Safety and Environmental Management Authority (**NOPSEMA**) to permit the Regia MSS. CGG is seeking such permission to carry out the activity as specified in this document and its appendices.

CGG proposes to undertake a three-dimensional (**3D**) marine seismic survey in the Otway Basin, in Commonwealth waters offshore from Victoria. The activity aims to gather data on the structure and composition of geological formations for the purpose of identifying petroleum resources.

The EP has been uniquely structured to:

- Reflect the passage of time over an 18-month process of gathering data and undertaking multiple impact and risk assessments.
- Provide clarity around how and why decisions evolved through such an extended timeline to prepare the EP.
- Capture information provided into the assessment process through consultation.
- Address feedback related to the digestion of large and complicated environmental approval documents presented by titleholders.

The Regia MSS EP comprises of this document and a series of appendices shown in Table 1. The table shows the natural grouping of the documents as they are related to the three-stage process we followed to assess environmental impacts and risks, prepare the EP, and perform the consultation. This process is explained in Section 2.

Table 1 – Regia MSS EP Appendices.

Regia MSS Environment Appendices	Appendix Reference	Relevance to Assessment Stages
Environmental Inputs		
CGG Environmental Policy	A1	These documents provided the starting point for preparation of the EP and the basis of the environmental assessment.
Description of Activity	A2	
Implementation Strategy	B3	
Context Documents		
Requirements that Apply	B2	These documents were the primary research commissioned by, or used by, CGG to form an understanding of the existing environment, put the environmental impacts and risks into context, and establish the processes for environmental assessment and consultation with relevant persons. They were prepared early in the assessment process and periodically updated throughout the assessment. B7c is a technical report from independent consultants that were prepared in response to updated technical guidance (NMFS 2024) that had been previously relied on in the sound modelling reports which was published in October 2024.
Commercial Fisheries Analysis Report	B6	
Initial Modelling Report – Sound Emissions	B7a	
Secondary Modelling Report – Sound Emissions	B7b	
NMFS 2024 User Spreadsheet Tool Output	B7c	
Seismic Sound Studies Report	B8	

Regia MSS Environment Appendices	Appendix Reference	Relevance to Assessment Stages
Biosis Otway Exploration Cultural Heritage Assessment	B10	
Oil Spill Modelling Assessment	B11	
Regia MSS EP Maps	B12	
Stage 1 Assessment		
Preliminary Environmental Impact and Risk Assessment (PEIRA)	B4	These documents capture the preliminary environmental impact and risk assessment. This first stage of the environmental assessment identified the environmental aspects of the activity and screened the cause-effect pathways to determine the impact and risks arising from the activity.
PMST Search Reports	B5	
Stage 2: Risk Assessments		
Accidental Release of Waste Overboard	D1	These documents are the detailed assessments of **risks** identified by the PEIRA for further assessment. The description of the environment that may be affected by each risk can be found in these documents, along with a prediction of the level of risk according to CGG's assessment process. These documents aim to demonstrate that the risk will be of an acceptable level given the measures adopted to protect the environment. They each conclude with setting appropriate environmental performance outcome(s). Matters for further assessment are identified at the conclusion of this second stage of the assessment.
Fauna Interactions	D2	
Invasive Marine Species	D3	
Accidental Release of Fuel	D4	
Stage 2: Impact Assessments		
Physical Presence	E1	These documents are the detailed assessments of **impacts** identified by the PEIRA for further assessment. The underwater sound impact assessments were broken into seven separate assessments because this reflected the complexity and pre-eminence of underwater sound effects arising from the activity. The description of the environment that may be affected by each impact can be found in these documents, along with a prediction of the level of risk according to CGG's assessment process. The documents aim to demonstrate that the impact will be of an acceptable level given the measures adopted to protect the environment. They each conclude with setting appropriate environmental performance outcome(s). Matters for further assessment are identified at the conclusion of this second stage of the assessment.
Underwater Sound - Plankton	E2	
Underwater Sound - Fish	E3	
Underwater Sound - Invertebrates	E4	
Underwater Sound - Birds	E5	
Underwater Sound - Turtles	E6	
Underwater Sound – Marine Mammals	E7	
Underwater Sound – Surfers, Divers and Swimmers	E8	
Artificial Light	E9	

~~Regia MSS Environment Appendices~~	~~Appendix Reference~~	~~Relevance to Assessment Stages~~
Stage 3: Further assessment and EP acceptance criteria		
Cumulative Impact Assessment	F1	These documents were prepared after Stage 2 was complete. These further assessments cater for detailed consideration of key environmental values and sensitivities and cumulative impacts – both issues raised during consultation. The other documents related to some of the EP acceptance criteria, specifically the demonstrations required to show that environmental impacts and risks are reduced to As Low As Reasonably Practicable and such that they will be of an acceptable level.
ALARP Assessment	F2	
Further Assessment of Key Environmental Sensitivities	F3	
Acceptability Assessment	F4	
Marine Mammal Detection Technology Report	F5	
Environmental Performance	G1	
Treatment / Management Plans		
Fauna Management Plan	G2	These documents were prepared after the completion of the environmental assessments as they are specific resources used to manage environmental aspects. There are many treatment plans prepared to manage impact and risks. These two are included in the EP as they are required to be included in the EP or are central to the case CGG is making that these impacts and risks are properly managed.
Oil Pollution Emergency Plan and Operational and Scientific Monitoring Plan	G3	
Otway Adjustment Protocol	G4	This document was prepared in consultation with commercial marine users, mostly commercial fishers. It provides a claims process for financial compensation in the event of unreasonable interference between the Regia MSS and commercial activities at sea.
Consultation Method and Records		
Relevant Persons Consultation Chapter	C1	These documents were developed throughout the preparation of the EP and are periodically updated in alignment with submission and resubmission timeframes.
Report on Consultations	C2	
Titleholders Report on Public Comment	C6	
Acoustic Detection Monitor Technology Report	C7	Appendix C7 was added to the submission following further information being sought by NOPSEMA about the capabilities of the acoustic detection monitors being trialled prior to the activity, which may be used later during the activity. It is commercially confidential and as such has been included in the sensitive information report.

The EP is structured to make it more accessible for the public and relevant persons. The content is slightly more educational than a typical EP because many of the consultations revealed a need to fully describe the regulatory requirements, share NOPSEMA guidance, and explain environmental management concepts such as reducing impacts and risks to as low as reasonably practicable (**ALARP**) and to an acceptable level. Given the considerable interest shown through the consultation process we prioritised clarification of information flows to the public and relevant persons.

By having a concise EP Summary (this document) and comprehensive appendices, CGG aims to simplify the assessment process. For NOPSEMA, areas of contention or focus are more easily accessible through the shorter, separate appendices, rather than reviewing a long singular document. For the public, this format is easier to digest, encouraging more readers, inviting more public comments, and potentially helping to identify more relevant persons. For relevant persons identified during preparation of this Environment Plan, the parts of the EP addressing their functions, interests or activities and subsequent feedback, and objections, and claims are located more quickly and easily through the specific appendices.

Consultation in Preparation of the EP & Public Comment

A significant feature of the preparation of this EP was the consultation process initiated by CGG on February 4, 2023. This process involved engaging with over 900 community members, relevant persons, environmental experts, government agencies, and regulatory bodies. The objective was to incorporate diverse perspectives and concerns into the plan, ensuring that the design of the survey and the mitigation of its adverse effects are well-informed and community inclusive. A public comment period on this EP received 14,879 submissions. Within those submissions there were 653 unique submissions, and 905 specific claims considered as inputs into the environmental management planning process.

Table of Contents

1 Introduction

Welcome to the Regia Marine Seismic Survey (**Regia MSS**) Environment Plan (**EP**). This document is intended to conform to the guidelines and regulations set forth for environment management in the *Offshore Petroleum and Greenhouse Gas Storage (*Environment*) Regulations 2023* (**the Regulations**). Reference to Regulations and Sections within those Regulations refer to these Regulations, unless otherwise stated.

1.1 Purpose of the Environment Plan

CGG is geophysical data analysis company who gather, process, and reprocess geophysical data for the purpose of licensing to interested petroleum companies. The Otway region has had 82 previous seismic surveys (2D & 3D) since the 1960's. The data is owned by the Australian government and published for analysis and interpretation. CGG has been interested in the geophysical data of the Otway for several years and has reprocessed existing data in the vicinity of the Regia MSS to reduce the extent of any additional future seismic activities. However, gaps remain in the existing 3D seismic coverage and the quality of the available data is insufficient for modern standards and usage and in some areas underlying the Regia MSS only 2D data exists.

Therefore, CGG propose to undertake a three-dimensional (**3D**) marine seismic survey in the Otway Basin, in Commonwealth waters offshore from Victoria. Hereafter, this activity will be referred to as the Regia MSS. The objective of the proposed activity is to provide a 3D data coverage and improved subsurface imaging within the Otway Basin. The new 3D data will provide an improved understanding of the subsurface, which to-date has been limited to 2D data coverage. Ultimately the new data will provide improved confidence in mapping major geological structures aiding in the identification and de-risking of petroleum prospectivity in the region.

This EP has been prepared to ensure the Regia MSS is planned and undertaken in accordance with CGG's Health, Safety and Environment Policy (**HSE Policy**), which can be found at Appendix A1. The EP has also been prepared to comply with the requirements of the *Offshore Petroleum and Greenhouse Gas Storage Act 2006* (**OPGGS Act**) and other legislative requirements described in Appendix B2.

Preparation of this EP has resulted in the adoption of ~~controls,~~mitigation measures ~~and operational procedures~~ to be implemented to reduce the potential of adverse environmental impacts and risks associated with the Regia MSS to ALARP and to acceptable levels. These can be found in Appendix G1 and in Appendix B3 – Implementation Strategy.

1.2 Scope of the Environment Plan

The scope of this EP addresses the petroleum activity – a marine seismic survey - and associated activities as described in Appendix A2. Of relevance, the scope of this EP covers 3D seismic data acquisition and associated line turns, run-ins, run-outs, seismic testing, and support activities within the defined Operational Area (**OA**).

The scope of this EP does not include the periods when the seismic vessel or support vessels are not within the OA, such as during maintenance activities outside of the OA, port calls, crew changes, inclement weather avoidance, or vessel mobilisation/demobilisation to/from the OA. During these periods the project vessels are deemed to be operating under the Commonwealth Navigation Act 2012 and are not managed within this EP.

1.3 Structure of this EP

To enhance clarity and understanding this EP is divided into a series of separate documents which reflect the environmental assessment process followed during preparation of the EP. Table 1 has

already shown the groupings of these documents and their relevance to the stage assessment process followed by CGG.

1.4 Definitions

The primary source of definitions within this EP come from the OPGGS (Environment) Regulations~~.~~ and they are not repeated here. There are many other terms used in this EP to supplement ~~these terms.~~the regulatory definitions. They are ~~shown below.~~defined in Table 2.

Table 2 - EP Definitions

Term	Definition
Acceptable level	The specified amount of environmental impact or risk that an activity may have, which is tolerable, is consistent with all relevant principles, and does not compromise the management/conservation/protection objectives of the environment.
As low as reasonably practicable (ALARP)	The ALARP principle refers to reducing impacts and risks to a level that is 'as low as reasonably practicable'. In practice, this means that the titleholder must show through reasoned and supported arguments that there are no other practicable options that could reasonably be adopted to reduce impacts and risks further, i.e. to demonstrate that the cost involved in reducing the impact or risk further would be grossly disproportionate to the benefit gained.
Activity limitation	A measure that eliminates or substitutes, constrains, limits, or otherwise restricts the activity such that impacts and risks can be avoided, or lessened to or below acceptable levels.
Consequence	The consequence of a risk is the potential outcome of the event on affected receptors (values and sensitivities) and can be positive, neutral or negative.
Emergency condition	An unplanned event that has the potential to cause significant environmental damage or harm to matters of national environmental significance (MNES). An environmental emergency condition may, or may not, correspond with a safety incident considered to be a Major Accident Event (MAE).
Environmental aspect	Element of an activity that interacts or can interact with the environment. Environmental aspects can have a direct impact on the environment, contribute only partially or indirectly to a larger environmental change, or create a risk to one or more environmental receptors. Aspects can be planned (inherent part of the activity i.e., light) or unplanned (not part of the activity i.e., spill).
Environmental risk	A change, which could occur to one or more environmental receptors, that is caused either wholly or partly by one or more environmental aspects associated with an activity. Environmental risks have a degree of likelihood and are not certain to occur.
Inherent impact and risk	The level of impact or risk with 'legislative and other requirement' controls in place, before the application of additional control measures.
Likelihood	The likelihood is the chance (or probability) of the consequence occurring, and only applies to risks.
Measure	An activity limitation, control measure, management system element, or legislative requirement that is adopted to eliminate, substitute, control, administrate, or protect the environment from adverse impacts.
Measurement criteria	A clear and objective way to evaluate environmental performance. Environmental performance outcomes and environmental performance standards must have appropriate measurement criteria, which define how environmental performance will be measured and determine whether the outcomes and standards have been met during the activity.
Residual impact / risk	The impact or risk remaining after additional control measures have been applied (i.e., after treatment of inherent impacts and risks).
Receptors	Features of the environment that may be affected by impacts and risks.

Threshold	The point at which a change becomes significant.

1.5 Details of Titleholder and Nominated Liaison

As required by Section 23, the details for the titleholder are:

- CGG Services (Australia) Pty Ltd
- Level 1, 1 Ord Street, West Perth WA 6005
- Telephone: +61 8 9214 6200
- ACN: 081 777 755

And the details for the CCG's nominated liaison for the activity are:

- Paul Rheinberg
- Level 1, 1 Ord Street, West Perth WA 6005
- Telephone: +61 8 9214 6200
- contact@regiamss.com.au

If there is a change in the titleholder, the titleholder's nominated liaison person or a change in the contact details for the titleholder or liaison person, CGG will notify NOPSEMA and provide the updated details (as described in Appendix B3).

1.6 CGG Corporate Environmental Policy

Section 24(a) requires that the EP must contain a statement of CGG's corporate environmental policy. CGG has two policies that are relevant to this section which are listed below and can be found in Appendix A1:

- Environmental, Social & Governance Policy
- Health, Safety & Environment Policy

These documents were considered as foundational to the Regia MSS EP and to the consultation process. Therefore, CGG published these policies on the Regia Consultation Hub at the commencement of the consultation process so that community members and relevant persons had line of sight to the policies that governed CGG's employees, contractors, and site visitors.

1.7 EP Summary

This document functions as the EP Summary required by Section 35(7). Table ~~2~~3 is a concordance table with the requirements of this section and this document.

Table 3 - EP Summary Concordance Table.

Section 35(7)	EP Summary Content Location
The location of the activity.	Appendix A2
A description of the receiving environment.	Section 4 of Appendices D1 to D4 and E1 to E9.
A description of the activity.	Appendix A2
Details of environmental impacts and risks of the activity.	Appendix B4 – PEIRA Appendix D1 – D4 – Risk Assessments Appendix E1 – E9 – Impact Assessments
A summary of the control measures for the activity.	Section 9.3
A summary of the arrangements for ongoing monitoring of the titleholder's environmental performance.	Appendix B3
A summary of the response arrangements in the oil pollution emergency plan.	Appendix B3 and Appendix G3
Details of consultation already undertaken, and plans for ongoing consultation.	Appendix C1 – Consultation undertaken. Appendix B3 – Plans for ongoing consultation.
Details of the titleholder's nominated liaison for the activity.	Section 1.5

2 Environmental Assessment Process

On 4 March 2023, CGG published the proposed environmental assessment method. It outlined a transparent, consultative approach that incorporates best practices in environmental management, and compliance with relevant legislation. Key elements include the application of the ISO 31000:2009 Risk Management Framework, relevant person communication and consultation, and detailed impact and risk assessment processes. Details on this process can be found in Appendix B3.

The methodology emphasises systematic, evidence-based evaluation of environmental aspects and integrates feedback from relevant persons and communities to inform the EP preparation. The environmental assessment process that underpinned the preparation of the EP had three stages. Each stage built on the information and knowledge of the prior stage, progressing into ever more detailed assessments which looked at environmental management from different perspectives.

2.1 Stage 1: Preliminary Environmental Impact and Risk Assessment

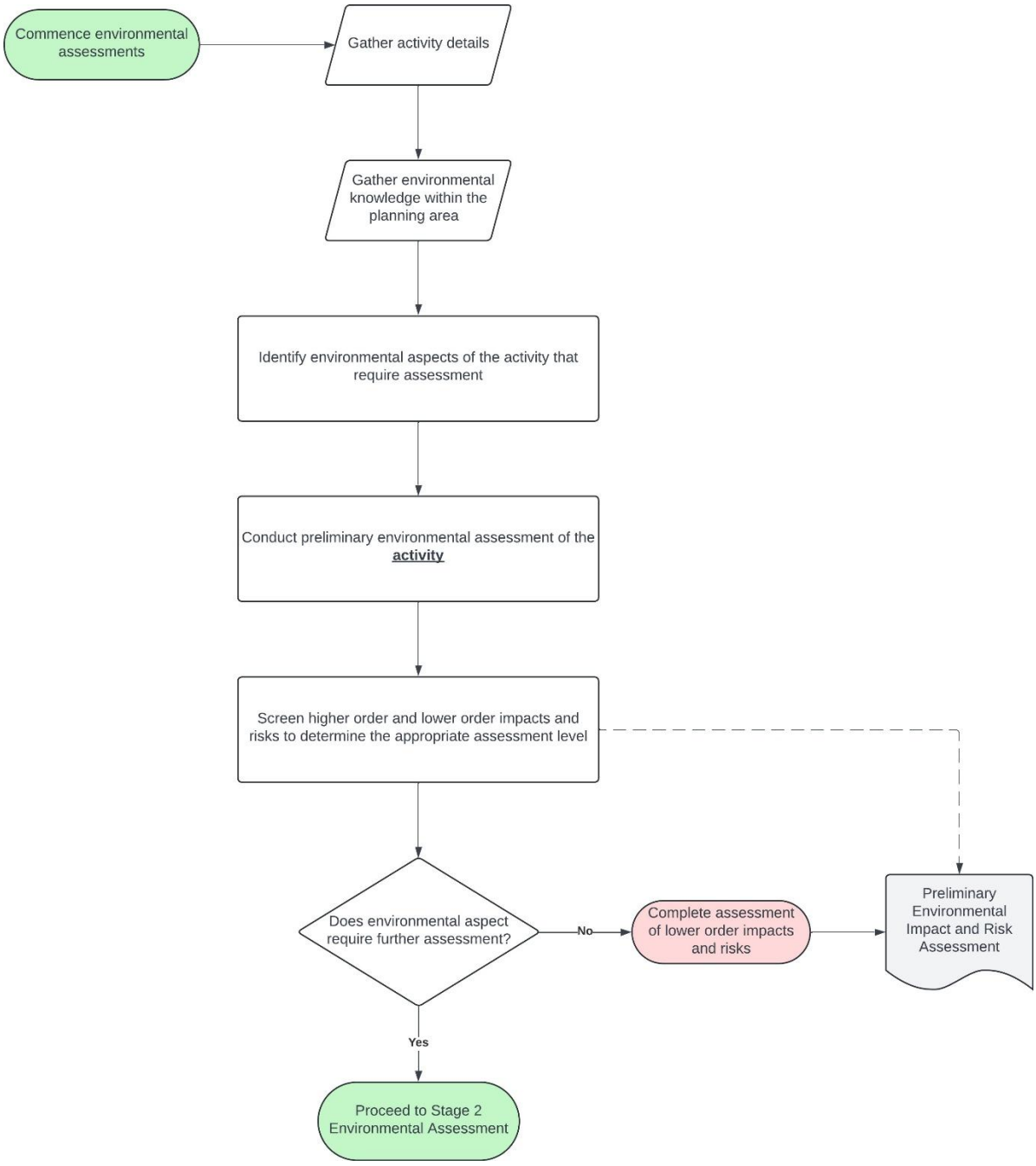
This first stage of the assessment focused on establishing how the proposed activity interacts with the environment (i.e. establishing what the environmental aspects of the activity are). Figure 1 shows the process we followed.

This first stage of the assessment focused on the activity as a whole. Information was collated on the proposed activity, including setting an initial geographical area of investigation, and gathering environmental knowledge of the area. The preliminary assessment established the cause-effect pathways between the proposed activity and the environment to determine the environmental aspects of the activity to be managed.

A screening was performed to separate the higher order impacts and risks that required additional detailed assessment, from the lower order impacts and risks, that could be assessed within this first stage. The output from this first stage, the Preliminary Environmental Impact and Risk Assessment (**PEIRA**), is found in Appendix B4. This document underpinned our initial consultations and provision of sufficient information to relevant persons.

Information used in identifying the environmental impacts associated with the activity was obtained from the following sources:

- CGG's environmental policy (Appendix A1) and description of the activity (Appendix A2).
- Professional experience of vessel activities/operations during seismic surveys.
- Previous EPs for seismic surveys.
- Literature review of the environmental values and sensitivity of the receiving environment with respect to species' presence, "biological calendars", habitat distribution and location of environmentally sensitive areas (breeding, migration, resting areas) (Annex 1 – Presence / Absence Analysis for Species within the Environment Planning Area).
- Identification of environmental values and sensitivities within and adjacent to the Environment Planning Area.
- Feedback from relevant persons (onshore and marine) to understand socio-economic activities that may be affected by the proposed activity.


Commence environmental assessments
Gather activity details
Gather environmental knowledge within the planning area
Identify environmental aspects of the activity that require assessment
Conduct preliminary environmental assessment of the activity
Screen higher order and lower order impacts and risks to determine the appropriate assessment level
Does environmental aspect require further assessment?
No
Complete assessment of lower order impacts and risks
Preliminary Environmental Impact and Risk Assessment
Yes
Proceed to Stage 2 Environmental Assessment

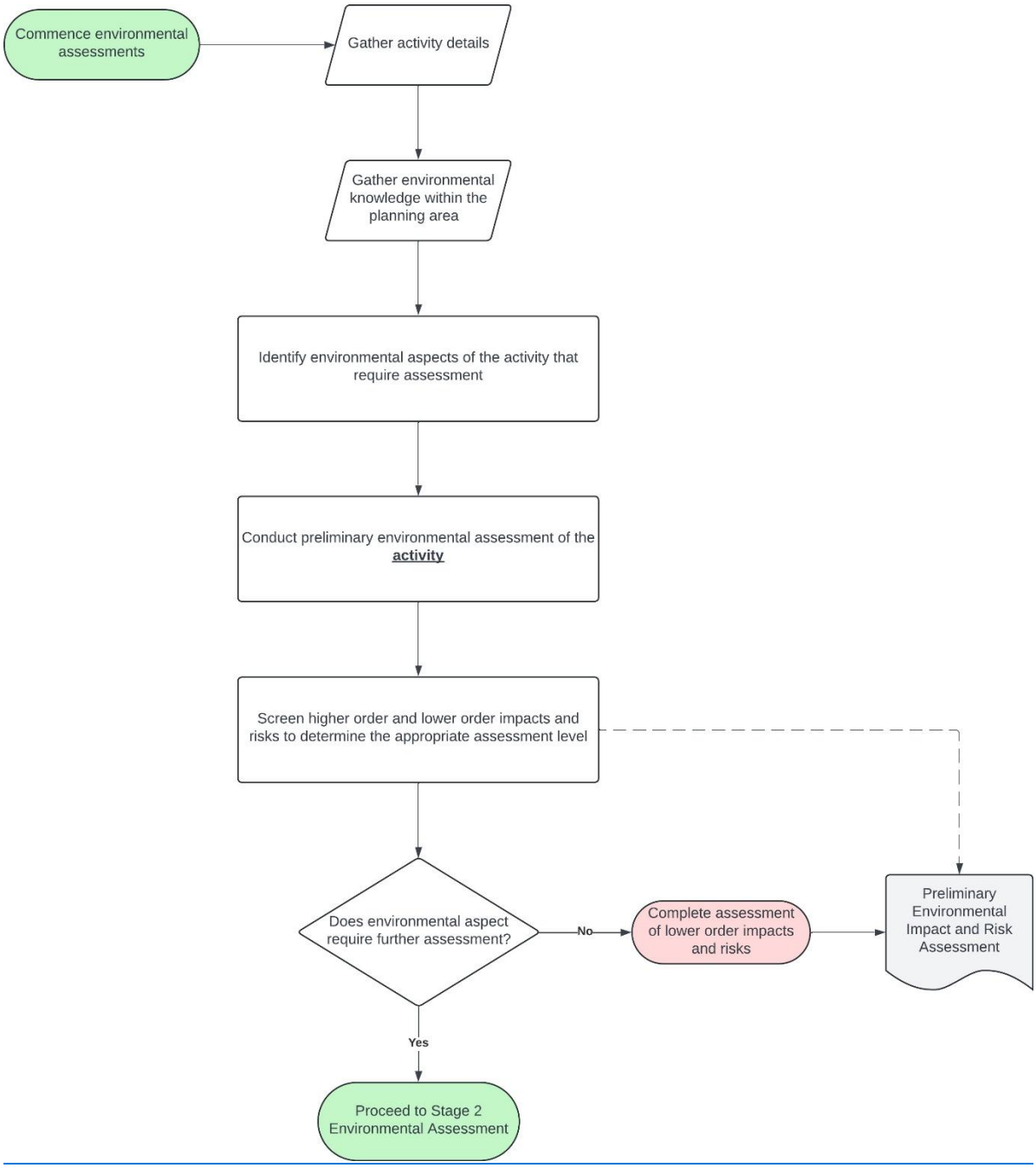


Figure 1 - Environmental Assessment Stage 1.

2.2 Stage 2: Detailed environmental assessments

This second stage of the assessment focused on the environmental aspects arising from the proposed activity and the identified impacts and risks from the PEIRA. Figure 2 shows the process followed.

The second assessment was undertaken at the aspect level. This approach was taken because the conclusion of this stage of the assessment process was to set Environmental Performance Outcomes (**EPO**), which are about the management of environmental aspects of the activity. The assessments primarily focus on demonstrating that the impacts and risks of the activity are of an acceptable level. This is because CGG applies this criterion before it attempts to further reduce impacts and risks through the ALARP assessment process.

This assessment built on the content and context of the first assessment and included consideration of additional content (gathered from literature reviews, modelling reports, and other expert reports etc.) before then undertaking each impact and risk assessment in respect of the environmental aspects arising from the proposed activity. These studies which were completed and published on the Consultation Hub included:

a) Research on legislative and other requirements that may apply to the activity (Appendix B2).

b) A sound propagation modelling report (Appendix B7a).

c) A literature review of scientific research related to the effects of seismic sound on the environment (Appendix B8).

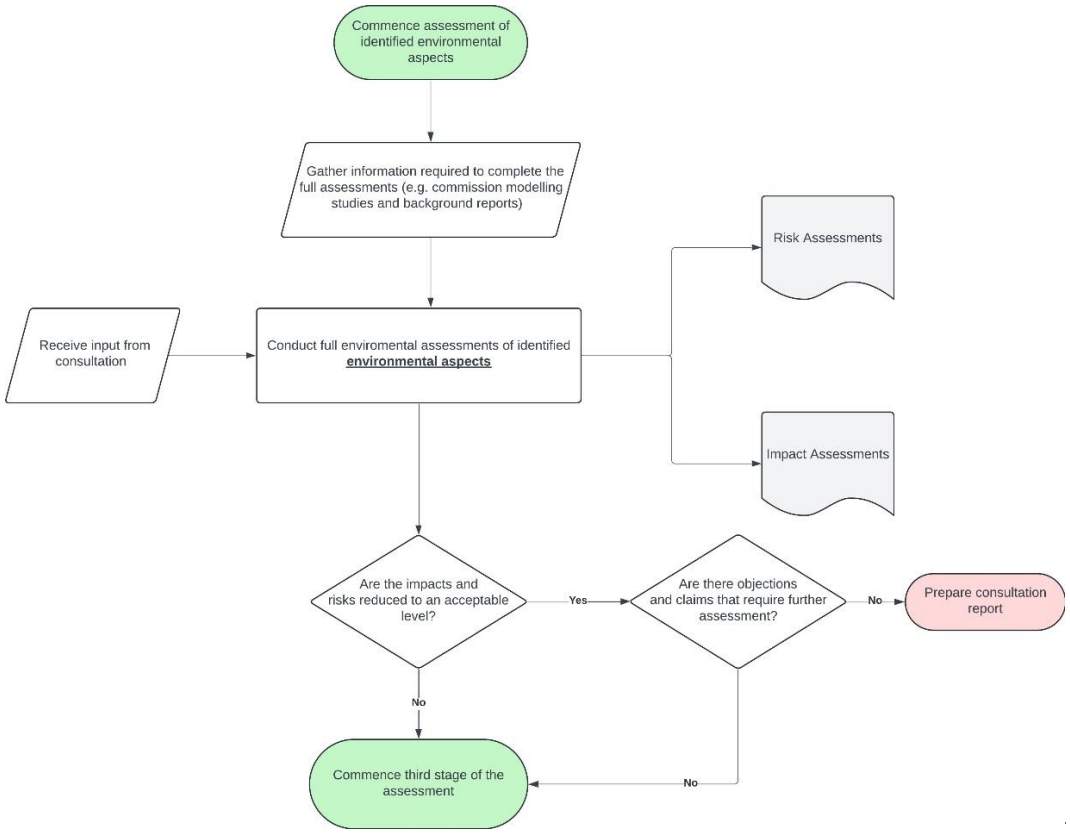
d) Research on cultural heritage in the Otway region (Appendix B10).

e) A review of oil spill modelling outputs in the Otway region (Appendix B11).

In addition to these studies, CGG published its decision-making criteria which were the defined acceptable levels of impact and risk for the activity. The defined acceptable levels for the activity as a whole and for each environmental aspect are discussed in Section 9.1 and justified in the relevant environmental assessment.

The criteria, or justifiable variations of them, have been used by CGG in recently accepted EP's (Gippsland MSS & Sauropod MSS). They are like the criteria applied in most EP's accepted by NOPSEMA and were assessed to be appropriate in the context of the Regia MSS. The Regia MSS Decision-Making Criteria document was posted on the Regia MSS Consultation Hub for 61 days between 1 May 2023 and 30 June 2023. This was done to ensure that relevant persons had the opportunity to comment on them prior to CGG applying the criteria in the impact and risk assessments.

Relevant persons were invited to comment on the appropriateness of the criteria and had an opportunity to influence CGG's application of the criteria to the environmental assessment process. Awareness was raised about this opportunity and the importance of inputting at webinars, in 1-on-1 meetings, community meetings, and on social media (Appendix C1 & C2). Despite this, no comments were received through the Consultation Hub, nor in any subsequent meetings.


Commence assessment of identified environmental aspects
Gather information required to complete the full assessments (e.g. commission modelling studies and background reports)
Receive input from consultation
Conduct full enviromental assessments of identified environmental aspects
Risk Assessments
Impact Assessments
Are the impacts and risks reduced to an acceptable level?
Yes
Are there objections and claims that require further assessment?
No
Prepare consultation report
No
Commence third stage of the assessment
No

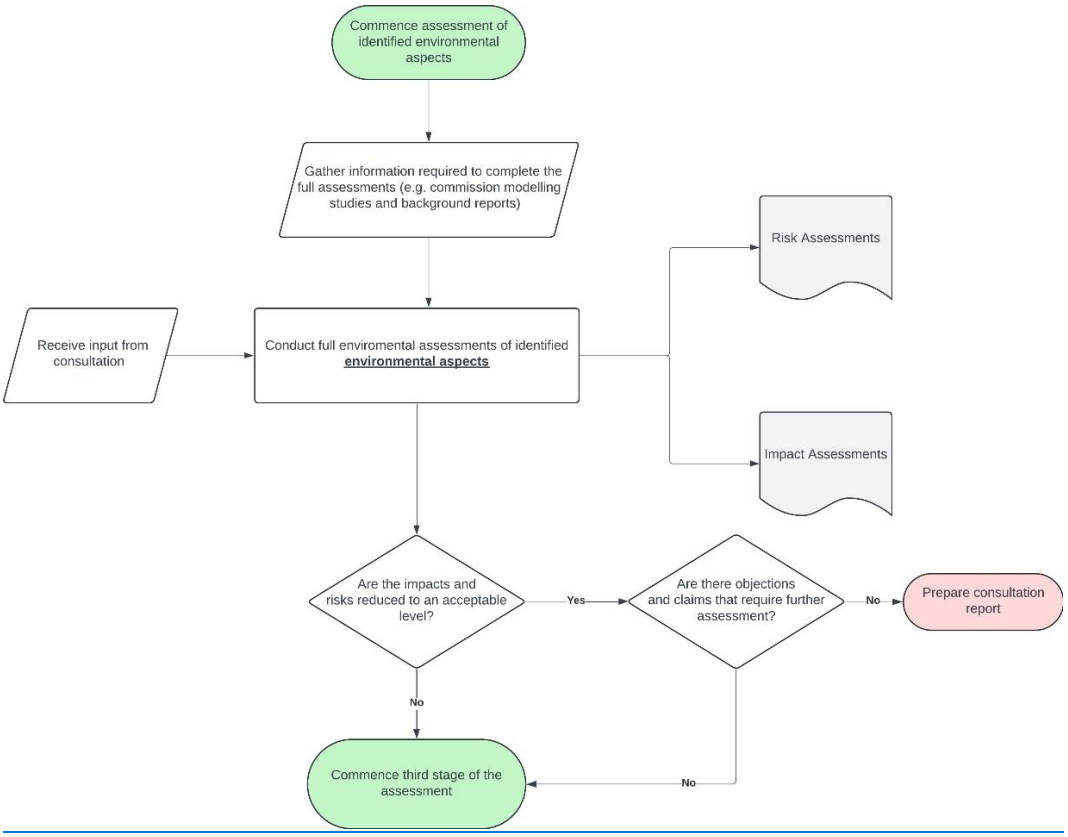


Figure 2 - Environmental Assessment Stage 2

Following publication of the PEIRA, CGG began working on the environmental assessment of each aspect arising from the activity. The processes used in the assessment are consistent with ISO 31000 and are described in more detail in the Implementation Strategy (Appendix B3).

The following four risk assessments were completed:

- Appendix D1 – Accidental release of materials or waste overboard.
- Appendix D2 – Collisions with marine fauna.
- Appendix D3 – Introduction of invasive marine species.
- Appendix D4 – Accidental release of fuel.

The following three impact assessments were completed:

- Appendix E1 – Physical presence.
- Appendix E2 – E8 – Underwater sound.
- Appendix E9 – Light.

The underwater sound impact assessments were broken into seven separate assessments (plankton, fish, invertebrates, birds, turtles, marine mammals, and divers) because this reflected the complexity and significance of underwater sound effects arising from the activity. This aspect also generated the most interest from relevant persons. By separating the assessments by receptor each assessment could be more focused to these species, and to relevant persons functions, interests, and activities.

These separate assessments were used to give sufficient information to relevant persons where it was relevant to their functions, interests, or activities.

At the conclusion of the second stage of the assessment, CGG performed a self-assessment of the content it had prepared against the environment plan acceptance criteria (Regulation Section 34) and the content requirements of an Environment Plan (Regulation Section 21-24). This led to the scoping of the next stage of the assessment.

2.3 Stage 3: Further assessment and acceptance criteria

This third stage of the assessment focused on ensuring environmental values and sensitivities of significance had been assessed in greater detail and that the EP acceptance criteria had been met. Figure 3 shows the process we followed.

The third assessment was undertaken at the impact/risk level. This is because the acceptance criteria focus on the demonstration that environmental impacts and risks will be of an acceptable level and reduced to as low as reasonably practicable (**ALARP)**.

Work in this stage built on the content of the first and second assessments and led to further assessment of impacts and risks for specific receptors that were identified as:

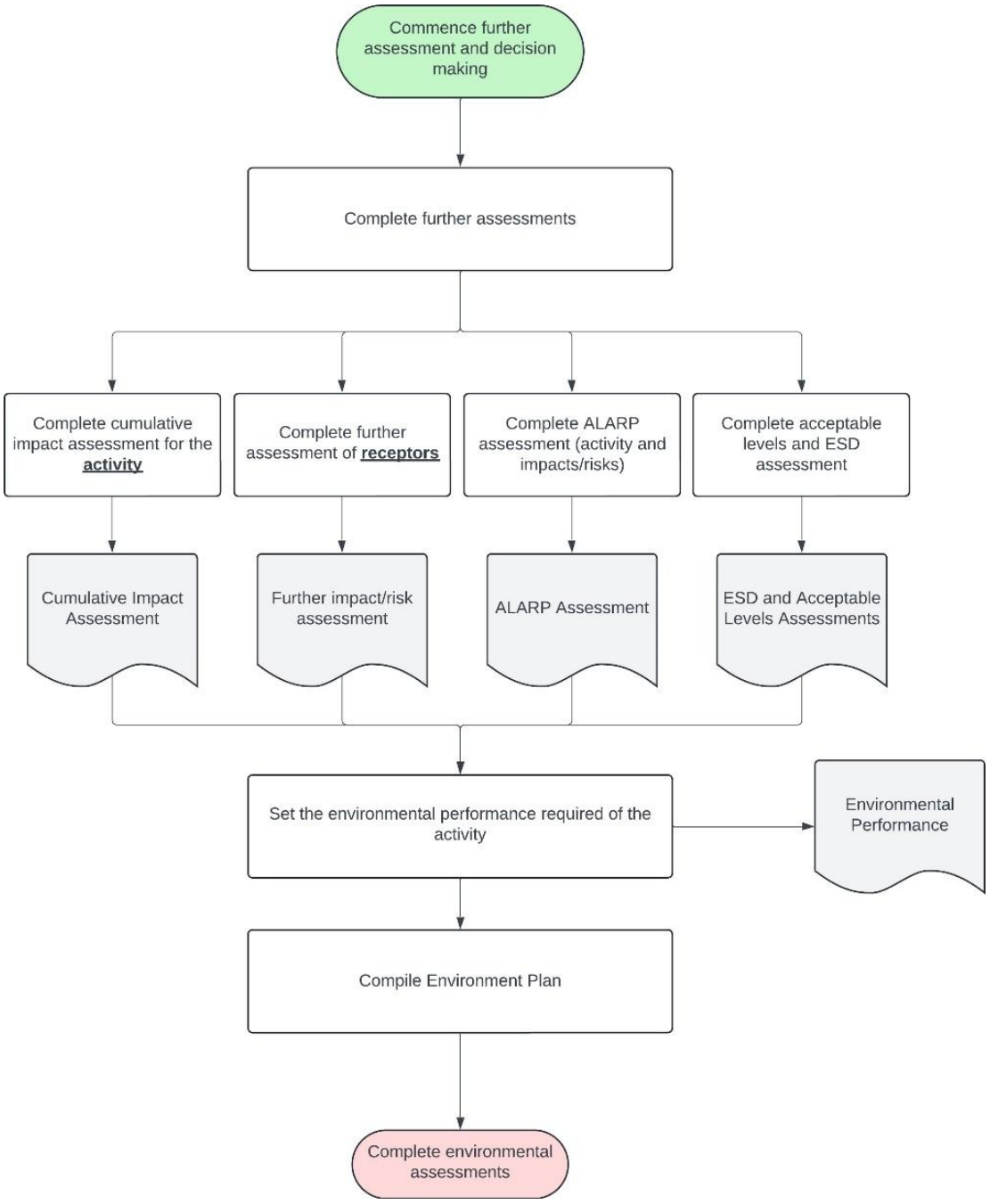
- needing further assessment because of consultations.
- needing further assessment because of predictive uncertainty.
- having elevated levels of protection under the EPBC Act.

The third and final stage of the assessment process comprised of:

- A cumulative impact assessment (Appendix F1).
- A demonstration that the environmental impacts and risks of the activity will be reduced to ALARP (Appendix F2), which included a detailed review of marine mammal detection technologies (Appendix F5).
- Further assessment of matters carried through from the detailed assessments (Appendix F3). These included:
  - Southern Right Whales / Koontapool (*Eubalaena australis*).
  - Blue Whales / Wuulok (*Balaenoptera musculus*).
  - Australian Sea Lion (*Neophoca cinerea*).
  - Little Penguin (*Eudyptula minor*).
  - Southern Rock Lobster (*Jasus edwardsii*).
  - Giant Crab (*Pseudocarcinus gigas*).
  - Glass Eels / Kooyong (*Aquilla australis*).
  - Gould's Squid (*Nototodarus gouldi*).
  - Pale Octopus (*Octopus pallidus*).
  - Blacklip Abalone (*Haliotus rubra*).
  - Pink Snapper (*Chrysophrys auratus*).
  - King George Whiting (*Sillaginodes punctatus*).
  - Plankton Communities and the Bonney Upwelling System.

  - Spawning Patterns.
  - Budj Bim Outstanding Universal Values.
  - Cultural features of the environment that may be affected.
- An assessment of whether the impacts and risks of the activity are of an acceptable level and consistent with the principles of ecologically sustainable development (**ESD**) (Appendix F4).
- Setting the environmental performance for the activity (Appendix G1).

Once these further assessments had been completed, CGG again undertook a decision process to determine whether the criteria for acceptance of an EP had been met. Only once CGG were satisfied that the criteria for acceptance of the EP could be met, was the EP content collated and submitted for the public comment process.


Commence further assessment and decision making
Complete further assessments
Complete cumulative impact assessment for the activity
Complete further assessment of receptors
Complete ALARP assessment (activity and impacts/risks)
Complete acceptable levels and ESD assessment
Cumulative Impact Assessment
Further impact/risk assessment
ALARP Assessment
ESD and Acceptable Levels Assessments
Set the environmental performance required of the activity
Environmental Performance
Compile Environment Plan
Complete environmental assessments

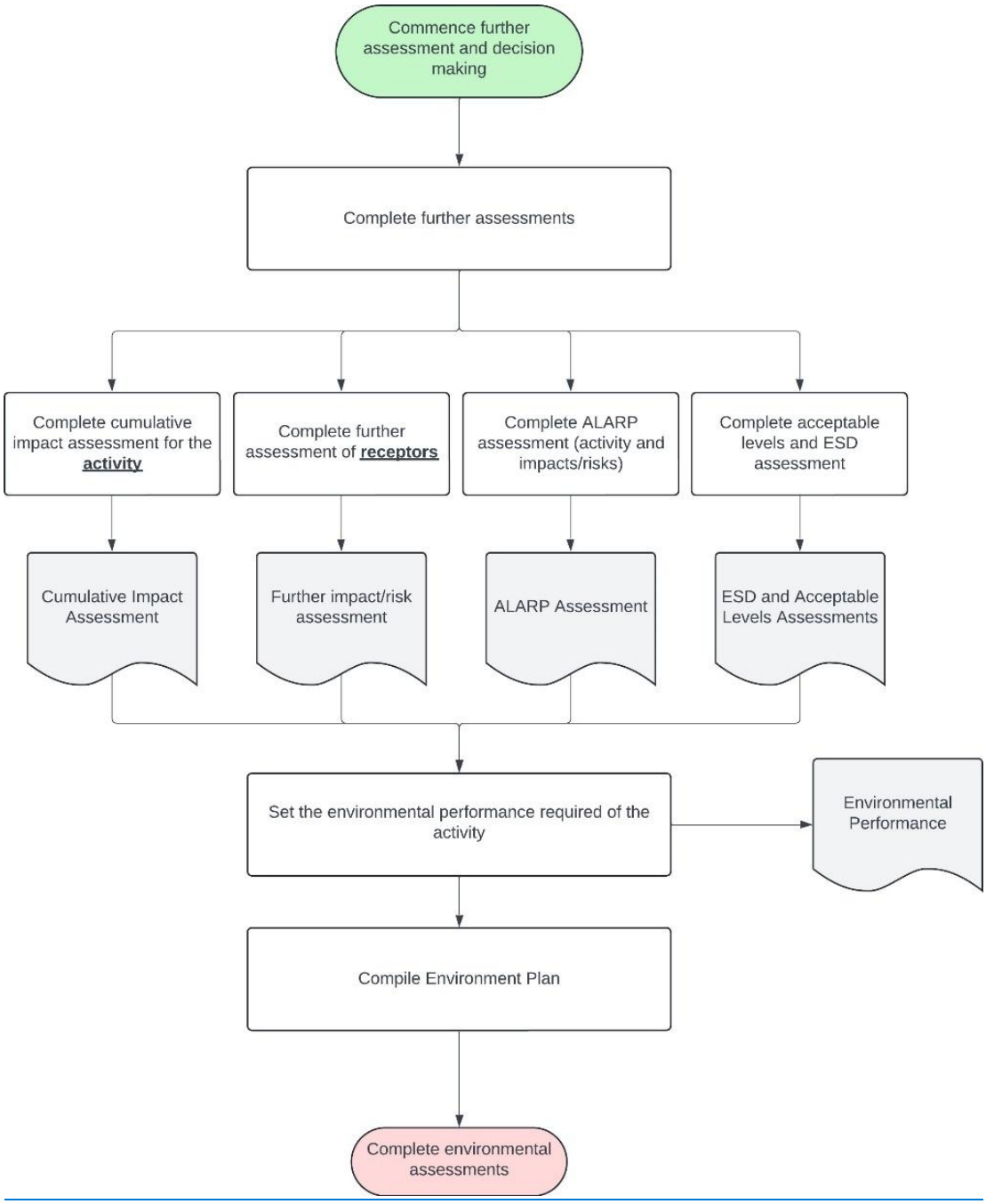


Figure 3 - Environmental Assessment Stage 3.

3 Public Comment

In January 2024, after 11 months of consultation, CGG submitted the EP for public comment. CGG continued to communicate throughout completeness check, public comment, and NOPSEMA's assessment process.

NOPSEMA invited comments on the Regia MSS EP from midnight on 25 January 2024 for a period of thirty days. 14,848 comments were received from a single petition email with embedded unique claims from submitters. A further 51 submissions were received through the NOPSEMA portal. Once the public comment period closed, NOPSEMA gave CGG a copy of the comments as per Section 30(2). CGG has considered each of the submissions made and, where appropriate, made modifications to the EP.

CGG has given NOPSEMA a written statement responding in general terms to the comments and indicated where any modifications to the EP were made in response to the comments. This written statement has been given to NOPSEMA separately to the EP to facilitate publication under Section 30(5).

The written statement is extensive, reflecting the large number of comments received. Therefore, CGG has prepared Appendix C6 as a summary of the full written statement for inclusion in the EP so that inputs from the public comment process can be shown to have directly contributed to the EP. Further, each relevant Appendix of this EP has been reviewed in consideration of comments and a new section added to show how all relevant comments have been incorporated into the EP. Table ~~3~~4 shows how the Matters raised during public comment have been incorporated into the EP in this document.

Whilst this additional work is not an explicit requirement of the Regulations, CGG believes it demonstrates our commitment to transparency and inclusivity. It also aims to assist NOPSEMA because all comments received must be considered (Section 30(6)) in deciding whether to accept the EP under Section 33.

Table 4 - List of changes arising from public comment matters.

Matter	Matter ID	Changes made arising from public comment
Matter: Impacts on dive-based fisheries	F17	CGG has considered this claim and, based on the updated secondary sound modelling, has updated EP Appendix E8 (Impact Assessment – Underwater Sound: Surfers, Divers and Swimmers), Appendix A2 sets activity limitations to reflect that the sound source will not be discharged at full power from areas which have been predicted to result in an exceedance of the human health criterion for recreational divers, surfers and swimmers along the coastline. CGG has also made updates to modelling in Appendices (E1, E2, E3, E4, E5, E6, E7, F3, and G2).
Matter: Impacts to juvenile seals	M30	Updates have been made to EP Appendix E7, and EP F1.
Matter: Displacement of Deen Maar and Portland seal colonies	M31	CGG has made updates to EP Appendix E 7, and EP Appendix F1.
Matter: Operational Buffer around Deen Maar	M32	CGG has made updates to EP Appendix E7, and EP Appendix F1.

Matter	Matter ID	Changes made arising from public comment
Matter: Insufficient mitigation measures for seals and sea lions	M33	CGG has made updates to EP Appendix E7 Appendix F1.
Matter: Geographic range and all species need to be defined and considered	I16	CGG has considered these claims and has rerun the PMST reports to ensure that all information on the likely/known presence of relevant species within the area, as well as information on their protection status, Biologically Important Areas (BIAs) and behaviours is up to date. The updated PMST reports are provided in full in EP Appendix B5.
Matter: Lack of detail on EPBC-listed species and enforceable measures	I17	CGG has considered these claims and has rerun the PMST reports to ensure that all information on the likely/known presence of relevant species within the area, as well as information on their protection status, Biologically Important Areas (BIAs) and behaviours is up to date. The updated PMST reports are provided in full in EP Appendix B5.

4 Consultation with Relevant Persons

Section 34(g) has two requirements for titleholders, that Division 2.2A consultation is complete prior to submission and that appropriate measures are adopted considering those consultations. The Act and Regulations do not define what constitutes consultation for the purposes of Division 3 and subsequently 34(g) and in this absence, CGG fulfilled consultation obligations based on the circumstances and characteristics of the relevant persons affected, learning from the case law and accepted environment plans for other petroleum activities.

4.1 Consultation in Preparation of the EP

Beginning on 4 February 2023, CGG commenced consultation in preparation of the Regia MSS Environment Plan. The purpose of consultation was to:

- Identify as many relevant persons as possible.
- Provide them with sufficient information to be informed about the possible consequence of the activity on their functions, interests, or activities.
- Improve the predictive quality of the environmental assessments by receiving information about the environmental values and sensitivities that may be affected.

Broadly, the consultation process involved the following steps:

1. Creating a community consultation and engagement plan.
2. Identifying ~~*each*~~*each*[1] relevant person through a broad capture of people and information.
3. Providing identified relevant persons with sufficient information to make an informed decision on the potential impacts of Regia MSS on their functions, interests and activities.
4. Noting requests for information from relevant persons, assessing and responding as appropriate.
5. Allowing a reasonable period for consultation.
6. Giving relevant persons appropriate feedback.
7. Assessing the merit of any objections, claims, or information received from relevant persons, and where appropriate incorporating this into the EP.
8. Keeping confidential records of all communications with relevant persons.
9. Having appropriate ongoing consultation procedures in place in the implementation strategy.

The complete details of these steps, the methodology followed, and tables of the information received, information requested, and assertions and concerns, are contained in Appendix C1. This includes justification for two modified consultation methodologies for commercial fishers and Traditional Owner groups due to their unique functions, interests, and activities.

[1] The requirement that the titleholder "must consult with each" relevant person is a requirement to consult with each and every relevant person. The text of reg 11A, including the multiple references made to "each relevant person" make that requirement clear." Tipakalippa v National Offshore Petroleum Safety and Environmental Management Authority (No 2) [2022] FCA 1121 at [81]. Although CGG recognises some RP's may remain unidentified for reasons discussed in Appendix C1, the methodology employed was reasonably capable of discharging this obligation.

In the process of consultation, 1126 individuals and organisations were contacted during the preparation of this EP. Of these points of contact, 252 relevant persons and 436 relevant organisations were identified, full details of these persons can be found in Appendix C3.

Following 11 months of consultation and research, CGG discharged its duty by providing all identified relevant persons with sufficient information and a reasonable period and opportunity to engage in the co-design of both the consultation process and the EP and submitted the EP for Public Comment.

In accordance with Section 24(b), Appendix C1 is a report on all consultations between CGG and any relevant person. Table ~~4~~5 shows concordance with the section requirement and the location of the contents in this EP.

Table 5 - Concordance table of content meeting the requirements of Section 24(b).

Regulatory Requirements	Location in the EP
A summary of each response made by a relevant person.	**Appendix C2** This document is in two parts. The first part addresses each person consulted, either as an individual, or as a representative of an organisation. The second part addresses each organisation or authority consulted. Each record of consultation was given a unique identifying 'Event ID' which is listed in Appendix C2. The details of each Event have been reported and the summary can be found in the furthest right column of the report, under each persons or organisation.
An assessment of the merits of any objection or claim about the adverse impact of each activity to which the environment plan relates.	**Appendix C2** Each objection or claim raised by a relevant person was logged in the Consultation Management System. The system requires that an assessment of the merits of each objection or claim is made. This enabled reporting against individuals that raised the objection or claim, as well as reporting in a consolidated list of objections and claims. Appendix C2 presents both reports; by person or organisation, and in a consolidated format.
A statement of the titleholder's response, or proposed response, if any, to each objection or claim	**Appendix C2** For each objection and claim entered into the Consultation Management System, CGG was required to make a statement of response. This included the consideration of adopting measures because of the consultations (meaning because of the objection or claim.
Consultation materials	**Appendix C2** This details the materials used during consultations to provide sufficient information to relevant persons. CGG prepared summary documents that it believed would be useful and on request from relevant persons. Documents requested were also published on the Consultation Hub. This appendix also includes all evidence of awareness raising activities through traditional and social media.
A copy of the full text of any response by a relevant person.	**Appendix C4** The full text copies of each Event sent by CGG to relevant persons are included for context as well as the full text copies of any response by a relevant person. This attachment is structured as a repeat of Appendix C2, only with the inclusion of the full text copies of every Event.

The consultation report is supplemented by Appendix C3 which is a sensitive part of the EP and must not be published. Appendix C4 is similarly a sensitive part of the EP and must not be published.

4.2 Appropriate Measures Adopted

By adhering to the fundamental principles of section 25 and conducting meaningful consultation, CGG adopted appropriate measures resulting from:

- Addressing the feedback from relevant persons and responding on a case-by-case basis.
- Assessing objections or claims made by relevant persons for merit.
- Where input was considered to have merit, using this input in the assessment of the environment and the construction of the EP.
- Adopting reasonably practicable measures in the presence of valuable objections.
- Providing relevant persons with CGG's response to their objection of claim. Whether it be an assessment of merit, a continuance in consultation or a reasonably practicable measure.

These processes ensured that CGG has ascertained, understood, and addressed all the environmental impacts and risks that might arise from the Regia MSS.

CGG received numerous communications strengthening the understanding of the environmental values and sensitivities that could be affected by seismic exploration.

During the consultation process, the information received from relevant persons was used in the environmental assessments.

When objections or claims were submitted to CGG, they were assessed on a case-by-case basis. Many objections or claims were of merit and had already been addressed with measures adopted because of legislative requirements (e.g. Policy Statement 2.1 Part A), industry standards (e.g. all contracted vessels required to have a light management plan), CGG management system requirements (e.g. a staff induction), or control measures adopted because of the impact and risk assessments (e.g. a bunkering procedure).

Where objections or claims were meritorious and not addressed by a previously established control measure, they were implemented by CGG. All the measures adopted for the activity can be found in Section 9.3, with the measures solely adopted because of the consultations repeated and listed in Table ~~5~~6 below. CGG's statement of response to each objection or claim also documents the measures adopted because of the consultations. This can be found in the relevant person consultation reports (Appendix C2).

Table 6 - Measures adopted because of consultation

Measure	Measure Type	EP Reference
No ~~vessel movement~~seismic acquisition within ~~4 nautical miles~~17 km of ~~the coast, except in case of emergency.~~Deen Maar / Lady Percy Julia Island	Activity Limitation	Appendix A2
~~No vessel movements in between Deen Maar and the mainland.~~ If the survey occurs in September, October, November or December, the acquisition lines will be acquired working from the deepest lines first	Activity Limitation	
~~No seismic~~If the survey occurs in April, May or June, the acquisition lines will be ~~undertaken in water depths shallower than 50 m~~ acquired working from the shallowest lines first	Activity Limitation	

Measure	Measure Type	EP Reference
~~No vessel movements with 700 m of fishing blocks G12, G13, H13, and H14.~~Operate the sound source at low power during line turns and if transiting between sail lines anywhere in the Mitigation Source Area, Active Source Area, and Survey Acquisition Area	Activity Limitation	
~~Minimise operational activity deeper than 200m.~~No petroleum activity to be carried out in January, February, March, July or August	Activity Limitation	
~~No MSS acquisition beyond 200 m depth contour.~~No vessel movements in between Deen Maar/Lady Percy Island and the mainland	Activity Limitation	
~~Sound will not be emitted above the stated capacity.~~No discharge of the sound source within the Bonney Upwelling KEF	Activity Limitation	
No ~~discharge of the sound source~~vessel movements within ~~17~~5 km of ~~Lady Percy Julia Island / Deen Maar.~~the Twelve Apostles State Marine Park	Activity Limitation	
~~If the survey occurs in April, May or June, the acquisition lines will be acquired working from the shallowest lines first.~~No activities within a designated Australian Marine Park (State and Commonwealth)	Activity Limitation	
~~Operate the~~The sound source will not be discharged at ~~low~~full power ~~during line turns and if transiting between survey lines anywhere in the Operational Area.~~while stationary	Activity Limitation	
~~No discharge of the sound source within the West Tasmania Canyons (KEF).~~Excise areas of the acquisition area that have been identified to cause exceedances of safe diving thresholds	Activity Limitation	
~~No discharge of the sound source in January, February, March.~~In waters deeper than 200 m, interfere with commercial fishers to no greater extent than is necessary for the efficient completion of the survey	Activity Limitation	
~~Excise areas of the acquisition area that have been identified to cause exceedances of safe diving thresholds.~~ No MSS acquisition beyond 200 m depth contour	Activity Limitation	
~~Data acquisition will follow a 130 orientation.~~No vessel movements with 700 m of fishing blocks G12, G13, H13, and H14	Activity Limitation	
~~No discharge of the sound source within the Bonney Upwelling KEF.~~No vessel movement within 4 nautical miles of the coast, except in case of emergency	Activity Limitation	
No ~~vessel movements~~sound source discharges within ~~5 km of~~ the ~~Twelve Apostles State Marine Park.~~ Orange Roughy research program areas	Activity Limitation	
Relief PAM/MFO Observer	Person	Appendix G1 and G2
Acoustic Detector Unit	Item of Equipment	Appendix B3
Reduce the sound source to low power if flocks of foraging birds are observed within 500 m of the source.	Practice	

Measure	Measure Type	EP Reference
Adjustment Protocol	Process	
Petroleum SIMOPS Plan	Resource	
On-Water Communications Plan	Resource	
Diving SIMOPs Plan	Resource	
Communicate with other marine users	Responsibility	

In addition to these measures, CGG also undertook further assessment of key environmental values and sensitivities because of the consultations. These included more detailed assessments of:

- The effects of sound on Southern Right Whales, Blue Whales, Little Penguins, Australian Sea Lion, Southern Rock Lobster, Giant Crab, Glass Eels/Kooyong, Gould's Squid, Pale Octopus, Blacklip Abalone, Pink Snapper, King George Whiting.
- The Outstanding Universal Values of the Budj Bim World Heritage Area and cultural features of Sea Country.
- The acceptability of environmental impacts on plankton and larval krill and the Bonney Upwelling.
- The consistency of the activity with the principles of Ecologically Sustainable Development.
- The demonstration of ALARP for management of underwater sound.

These measures are considered appropriate because:

1. The measures directly address key concerns raised by relevant persons, showing a commitment to mitigating environmental, social, and cultural impacts that matter most to the consulted communities.
2. The measures align with and go beyond all relevant environmental laws and regulations.
3. The measures are realistic and implementable, considering operational and budgetary constraints to ensure they can be effectively carried out.
4. The chosen measures are known to effectively reduce the specific environmental or social impacts identified, prioritising activity limitations that eliminate a cause-effect pathway.
5. The measures are specific and clearly defined, making it easy for CGG to implement them without ambiguity or misinterpretation.
6. The measures have been adopted within CGG's management system, meaning that the measures will be continuous assessed for their effectiveness.
7. By reflecting best practices in similar contexts, the measures demonstrate a high standard of environmental management, adding credibility and robustness to the approach.
8. The measures allow for ongoing feedback, creating a mechanism to refine and adapt the approach based on real-world effectiveness and further relevant person input.

5 Implementation Strategy

Appendix B3 details CGG's approach for environmental management of the Regia MSS in accordance with Section 22. Appendix B3 was first published in February to support consultation with relevant persons. Publishing this document early in the assessment process was essential as it provided the community with a clear understanding of the company's management systems in practice, especially in relation to each sub-clause of Section 22.

Appendix B3 contains a description of the Environmental Management System (**EMS**) designed to ensure that CGG's activities, specifically for the Regia MSS, are conducted in an environmentally responsible manner. It includes specific measures to be used to ensure that regulatory requirements are met for the duration of the activity. These includes:

- CGG's environmental assessment process.
- A management of change process.
- A management of knowledge process.
- A management of communications process.
- A management of adverse weather process.
- Contractor and supplier management process.
- An Acquire Seismic on Paper process.

The EMS encompasses a structured framework for managing environmental responsibilities, facilitating compliance with legal and other requirements, and achieving continuous improvement in environmental performance. The system includes mechanisms for identifying environmental aspects and impacts, setting objectives and targets, and monitoring and reviewing performance to mitigate environmental risks effectively.

There are also several resources and practices outlined in the implementation strategy that explain how CGG proposes to manage the activity and its environmental impacts and risks. Details of the above processes and resources can be found in Appendix B3.

6 Development of the Description of Activity

The Regia MSS provided for in this EP is proposed to be carried out as per the Description of Activity found in Appendix A2. This allows for the activity to be undertaken during a near 5-year period, between 1 April 2024 (subject to acceptance of this EP by NOPSEMA) and 31 December 2028.

Appendix A2 presents a comprehensive description of the Regia MSS. This document outlines operational and design envelopes, detailing the timing, location, and nature of the activities. The activity encompasses various aspects such as seismic surveying, streamer and sail line operations, sound source specifications, and support activities, all described with relevant environmental parameters. This comprehensive activity description ensures transparency and rigor in assessing environmental impacts and risks, fulfilling the requirements of Section 21(1).

CGG undertook a highly consultative approach to the activity design. It involved publishing early versions of the Description of Activity and progressively refining the areas of geological interest based on relevant person input. CGG published updated versions of Appendix A2 throughout the consultation process, with the earliest version being available on the Consultation Hub since 4 February 2022. There is a revision history included in the document which shows the additions made to the document throughout the environmental assessment processes.

Over time, the activity evolved and narrowed, influenced and balanced by the consultation process and the geophysical objectives of the survey. The evolution of the activity included:

- Initially establishing an activity planning area of 7,755 km^2 abutting the State waters boundary with a 155 km environment planning area shown in MAP-REG-EPM-080.
- An initial preference for a summer acquisition window due to:
  - Better weather which would have meant a shorter survey due to less vessel downtime which reduces physical presence impacts and reduced the overall cost of the survey.
  - The initial overlap of the activity planning area including overlap with the (then) Southern Right Whale (SRW) reproductive BIA meaning their absence was required to complete the survey.[2]

Following initial community information sessions, three overriding themes of concerns relevant to the adverse effects of the activity, led to the first set of modifications to the proposed activity. The first theme related to concerns the local communities had for commercial fishing activities which were understood to focus on shallower waters. The second theme related to increased levels of biodiversity found in the region in summer months and the importance of the upwelling events to ecological integrity. The third theme related to effects from elevated levels of sound to Southern Right Whales, the Australian fur seal breeding colony at Lady Percy Julia Island / Deen Maar, and Blue Whales.

CGG set the acquisition area as soon as the geophysical objectives for the survey were confirmed. The area may narrow further as the project progresses towards operations and may also narrow whilst carrying out the activity due to weather and other events that may necessitate prioritisation of acquisition areas. The absence of a final acquisition area does not invalidate CGG seeking permission for the Regia MSS because:

- Other activity limitations are in place to constrain the activity.
- A spatial limitation for discharge of the sound source exists – the active source area.

[2] Note that the Commonwealth government Conservation Management Plan for SRW was under review during the preparation of the EP and the SRW BIA changed twice on the National Conservation Atlas which contributed to the evolution of the activity design.

- The impact and risk assessments have been completed on a larger area than the future acquisition area – either the original activity planning area or the active source area (plus justified buffers for each impact and risk).

It is important to note that Appendix A2 serves as the foundational document for ensuring compliance with Regulations Sections 17, 18, and 19. It is the definitive instrument for the Regia MSS and should be referred to as the primary source of information. In the event of any discrepancies or contradictions between Appendix A2 and other parts of the EP or its appendices, it is to be noted that such inconsistencies are unintentional. In such cases, Appendix A2 prevails and should be considered the authoritative source for compliance and operational guidance. This approach guarantees consistency and clarity in aligning our activities with the regulatory requirements.

6.1 Survey timing constraints

As part of defining timing-based activity limitations, a presence/absence analysis of environmental receptors in the environment planning area was commissioned to decide on the preferred timing of the activity. A summary outcome of the analysis can be found in Annex 1 – Presence / Absence Analysis for Species within the Environment Planning Area. Like most offshore activities there will always need to be environmental trade-offs in terms of timing.

An initial and preferred survey timing was set to before consultations began. So, the summer months were selected as a time of year when the survey could be completed as quickly as possible. The decision to prefer the summer months was made on the basis that:

- A short survey results in the lowest level of overlap with all sensitivities and is the most efficient from an operations perspective.
- The shallower areas of interest in the activity planning area were coincident with the Southern Right Whale (**SRW**) biologically important area (**BIA**) which can only be accessed from November – April.
- Interactions with Blue Whales (**BW**) could be managed given the larger spatial distribution of the population with concentrations westward of the survey.
- The winter months in the Otway are known for rough seas and high winds. This means seismic surveying is not possible due to safety concerns and weather down time extending the duration of the survey. Therefore, the timing of the survey had to prefer the transitional seasons and the summer months.

Through consultation it became clear that that the increase in biodiversity during the peak summer months, mostly driven by the Bonney Upwelling, were of significant concern to relevant persons. Further analysis of the environmental values and sensitivities concurred that the summer months did show increased environmental productivity and significance to the summer months. This resulted in January, February, and March being excluded from CGG's planning for the activity. This step increases survey duration, at significant additional cost to CGG, however the environmental benefits clearly outweigh the cost.

CGG did consider excluding December from the survey timing as this period is a known period of biodiversity increasing leading into the New Year period. In summary, if the survey can start on the first day of September, then there will be no activity in December due to the maximum duration limitation. However, the presence of Southern Right Whales commencing their southern migration may delay the start of the survey. Therefore, setting a hard stop of no acquisition in December could further impede geophysical objectives. In this assessment, CGG notes that the survey may have to end prior to December simply due to the abundance of whales and resultant whale related shutdowns making the survey inefficient to continue with. In this way, the survey will end due to the increase in megafauna presence and not an arbitrary date.

CGG also considered a similar exclusion for April. Blue Whales are known to be present in the region in this month, though in reducing numbers as they begin their migration north. If excluding April, the

survey would not be able to commence until the first day of May. The maximum survey duration would take the survey to approximately the end of July. The weather in June is worsening and in July it is not suitable for safe acquisition. Therefore, acquisition in the autumn period needs to start as early as possible. To fit the maximum duration of the survey in this autumn window an earliest start date of the first day of April was set. CGG acknowledges that whale abundance, particularly Blue Whale presence given the increase detection and shut down requirements, may result in the survey being unable to start exactly at this time. It is likely that inclement weather will curtail the survey in this acquisition window.

6.2 Survey spatial constraints

During consultation in preparation of the EP, the activity planning area was regularly reviewed and updated with spatial constraints established. In addition, CGG commissioned sound propagation modelling to provide an understanding of the effect distances to key environmental locations along the coast and effect distances for relevant groupings of environmental receptors. The initial modelling report can be found at Appendix B7a.

Australian Marine Parks (State and Commonwealth) provide elevated levels of protection to parts of Australia's marine estate. Under the NOPSEMA Guidelines (N-04750 -GN1785), CCG is not permitted to undertake a petroleum activity in an Australian Marine Park without authorisation. The transit to the operational area is not part of the proposed petroleum activity and there is no overlap of the operational area with any Australian Marine Park. Notwithstanding, to avoid ambiguity about whether there will be any deployment or retrieval of gear whilst in an Australian Marine Park, CGG commit to no activities within a designated Australian Marine Park (State and Commonwealth).

Table ~~6~~7 below outlines the constraints applied by CGG in response to consultation feedback whilst balancing geophysical objectives.

Table 7 - Constraints and corresponding Rationale to Consultation Feedback.

Constraints	Rationale
Protection of commercial fishing species and interests	Commercial fishers, including abalone divers, raised concerns about the effects of particle motion on the abalone stocks. After reviewing the literature on these effects CGG decided to eliminate activities within the 30 m depth contour. This decision also considered that the initial review of fishing data from the Victorian Fishing Authority showed a vast majority (>70%) of catch came from fishing blocks abutting the coastline. It was clear that some form of depth exclusion would provide some certainty to some fishers that their activities could continue in parallel with the proposed survey.
	Consultation with a commercial fisher led to an activity limitation to exclude acquisition from fishing blocks G12, G13, H13, and H14, plus a 700 m buffer to protect the target species of the fisher.
	Consultation with a commercial fishing industry association identified long-terms sampling sites for a fishing research study. This led to an activity limitation to exclude all vessel movements from the sampling locations.
	Consultation with commercial fishers, and commercial fishing associations, revealed concerns about the overlap with productive trawl fishing areas in water depths of 200 m to 400 m resulting in an activity limitation of no acquisition deeper than the 200 m bathymetry contour, and reduced operational movements in that area.

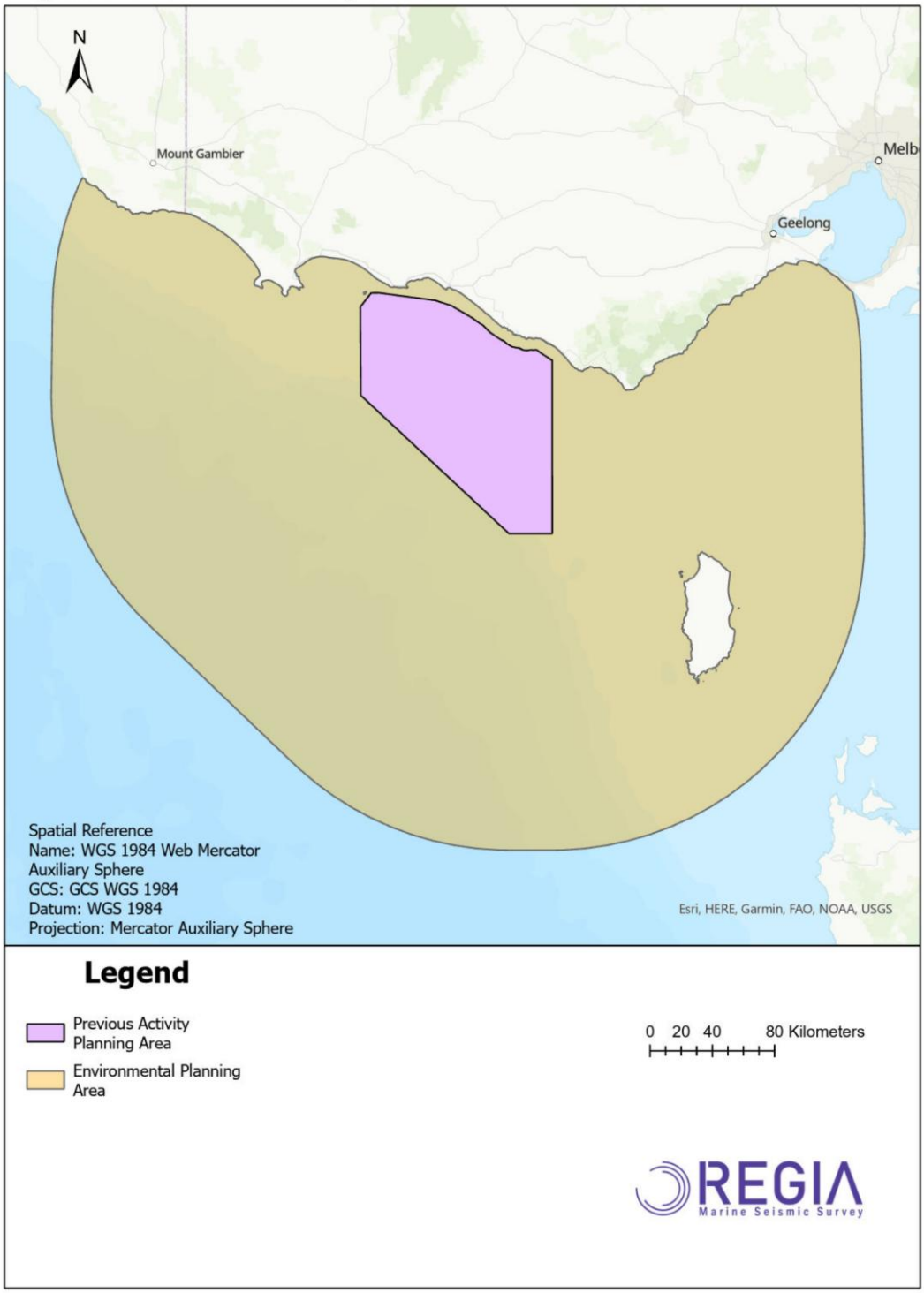
Constraints	Rationale
Further protection for shallow waters where biodiversity is at its highest	Further concerns associated with the increased biodiversity in shallower areas outside of the summer months was raised by both conservation groups (concerns for the effects from seismic survey on zooplankton) and from commercial fishers (concerned about access to their stocks). CGG initially implemented a 30 m depth exclusion (as above). This was increased to 40 m to provide increased levels of protection for these environmental values and sensitivities. Later, and after further consideration and consultation with relevant persons, this exclusion extended to the 50 m depth contour.
Protection for marine fauna associated with Deen Maar / Lady Percy Julia Island	A 10.8 km, and later a 11.8 km, buffer was placed around Lady Percy Julia Island / Deen Maar which is the behavioural effect distance for pinnipeds. Note: The buffer around the island is now 17 km due to the exclusion of acquisition in water shallower than 50 m.[3] [Paragraph updated in response to F17].
Protection of plankton	Consultation with conservation groups and relevant persons revealed that the change in timing of the survey did not adequately address concerns associated with effects to zooplankton, particularly during upwelling events and the values associated with Key Ecological Features (KEFs) in the region. This resulted in an activity limitation related to the KEFs. Regarding the West Tasmanian Canyons KEF, the shallowest point coincides with the 400 m depth contour and the canyon features of this area extend across the shelf into Victorian waters. As such it can be argued that these canyons have similar value to the upwelling events. Therefore, CGG decided to limit its acquisition area to shallower than 400 metres. Noting this was later further constrained to protect commercial fishing interests as stated above.
Protection for cultural features associated with Deen Maar / Lady Percy Julia Island	Consultation with Traditional Owners (including Gunditj Mirring Traditional Owners Aboriginal Corporation) indicated that Deen Maar was a site of cultural importance. CGG noted the buffer already in place and received no confirmation whether this distance was sufficient to manage effects on cultural values. CGG committed to no vessels traversing between Deen Maar and the mainland. Note: The buffer around the island is now 17 km due to the exclusion of acquisition in water shallower than 50 m. [Paragraph updated in response to F17].
Protection of marine parks	Consultation with Parks Victoria resulted in an activity limitation of no operational activity within 5 km of the Twelve Apostles State Marine Park.
Protection for divers	Consultation with a local dive shop/school revealed concerns about sound effect threshold exceedance for divers at known popular dive sites. This has resulted in an activity limitation to ensure that the effect levels to humans are not exceeded at those sites. This feedback also led to an agreement to implement a simultaneous operation (SIMOPS) plan for divers in the region.

The exclusion zones associated with Lady Percy Julia Island / Deen Maar provided an operational challenge for CGG to maintain its geophysical objectives within the activity planning area and to have sufficient buffer around the acquisition area to undertake line turns in a safe manner. This required an increase on the western edge of the activity planning area to allow for line turns to maintain these measures and safe navigation. The increased activity planning area was only for the operational needs of the survey and not for additional acquisition areas.

[3] Due to differences in the 50 m water depth contour across datasets, and its transient potential, a 17 km buffer from Deen Maar / Lady Percy Julia Island is a more measurable and conservative limitation (i.e. further away from the island) than the 50 m contour.

Overall, the spatial activity limitations adopted to reduce the activities environmental footprint have resulted in an overall reduction of 39% of the original activity planning area. The remaining area has been reclassified as the active source area.

Regia MSS - Initial Planning Areas



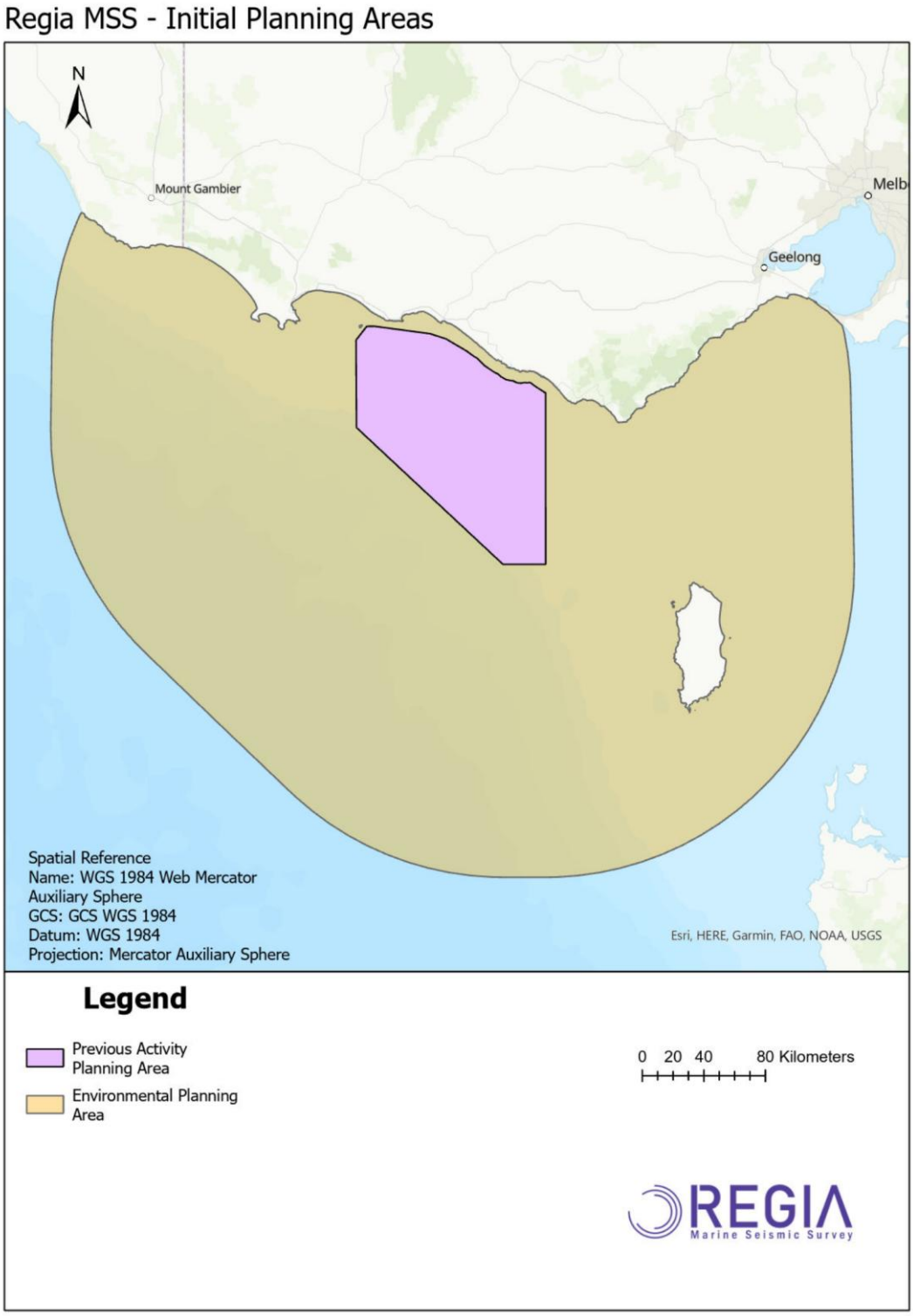


Figure 4 - Initial Planning Areas (MAP-REG-EPM-080).

7 Gathering Environmental Knowledge and Data

7.1 Development of the Description of Environment

CGG took a novel approach to documenting the description of the environment that may be affected by the activity. Rather than produce a single central source of environmental knowledge, environmental values and sensitivities are described in each of the impact and risk assessments. This approach allows for greater focus on describing the environment related to how it is affected, and not just in general terms. It also provides clarity about which cause-effect pathways arising from the activity interact with each environmental value and sensitivity.

The way that CGG began to understand the environment that may be affected started with setting the largest geographic area to be studied in the preparation of the EP. This was assumed to be the largest area that may be affected by an environmental aspect of a seismic survey – in this case it was an unplanned oil spill. This area was designated the Environment Planning Area (**EPA**). The EPA represents a 150km buffer around the Activity Planning Area, plus a 5km buffer to include coastal sensitivities. The 150km distance was selected as it is conservatively the farthest an oil spill could reach in the unlikely event of an accidental release of marine diesel.

This area was shown on the interactive map on the Consultation Hub and visitors to the site were able to share information on the environmental values and sensitivities they had in the area. There were several environmental values and sensitivities highlighted on the interactive map which can be found in Appendix C2 and remain online. 78 map comments were received in total with the following examples of the community sharing their environmental values and sensitivities:

- One comment identified Logans Beach as south-east Australia's only established SRW nursery.
- Two comments identified Fairy (Little) Penguin colonies at coastal locations that the community valued.
- One comment highlighted the cultural values of Sacred Birthing Grounds for the SRW and "stood in solidarity with Gunditjmara Traditional Owners of this precious Sea Country."
- One comment identified "The Bonney Upwelling is vital to the survival of local marine species."

These map comments and all information received through the consultation process have been considered in the impact and risk assessments. Comments were taken at face value and lead to an increased weighting on level of study and environmental protections required for the identified environmental value or sensitivity. The information received into the assessment process has been captured in the consultation reports for each relevant person.

In parallel to receiving comments through the website, the **PEIRA** identified the basis of the spatial extent of each environmental aspect of the activity. These distances were subsequently used to complete multiple queries of the Protected Matters Search Tool and other databases of environmental values and sensitivities. The PMST reports completed to inform the **PEIRA** and the subsequent assessments (Appendices D1 – D4 and E1 – E9) can be found in Appendix B5.

These search reports were run again in May 2024 prior to submission to ensure any changes to species or listings were identified to cater for the passage of time [In response to Matters: I16 and I17]. These searches will be re-run prior to the activity commencing to help determine any changes to environmental knowledge underpinning this EP.

7.2 Requirements that Apply to the Activity

Appendix B2 is a comprehensive compilation of legislative and regulatory requirements relevant to the environmental management of the Regia MSS. It encompasses international conventions, Commonwealth and state legislation, policy statements, and international and industry standards. The document includes a detailed list of these requirements, their relevance to the Regia MSS, and outlines how the proposed activity will adhere to these requirements, demonstrating compliance and a commitment to best practice environmental management. The document is structured to be updated regularly, ensuring the activity remains within the current legal framework.

Appendix B2 was first published during the establishing context step of the environmental assessment process. Publishing the requirements that apply to the environmental management of the activity early in the consultation process is important because it:

- Enhances transparency about the regulatory framework guiding the project.
- Allows the public and relevant persons to understand the compliance landscape and evaluate the activity against these criteria.
- Facilitates informed feedback and meaningful discussion during the consultation.
- Demonstrates the project's commitment to regulatory adherence and best practices.
- Enables early identification and resolution of potential compliance issues.

As part of the detailed environmental assessments, CGG considered those identified requirements that apply to the activity and has listed all those that were relevant to each cause-effect pathway as evidenced in the Annexes of each chapter. So, the legislative and other requirements were used in the environmental impact and risk analyses and references to relevant laws, regulations, conventions, and EBPC Act guidance documents are made throughout these analyses to tie the whole assessment process together and demonstrate how each of these requirements will be met as required by Section 21(4)(b).

CGG believe that the content in each impact and risk assessment, along with Appendix B2, demonstrates our ability to properly identify and meet the requirements because it comprehensively lists relevant legislative and regulatory requirements and:

- Describes the applicability of each requirement to the activity in detail.
- Outlines specific strategies and measures in place to ensure compliance.
- Is constructed with due diligence to reflect the latest legal standards.
- Has been peer-reviewed by legal experts to ensure accuracy.
- Provides a clear, auditable trail of how operational procedures align with regulatory obligations.

7.3 Underpinning Studies of the Environmental Assessments

7.3.1 Sound modelling

CGG contracted JASCO Applied Sciences (JASCO) to undertake a numerical modelling study of underwater sound levels associated with the initial Regia MSS acquisition lines to assist in understanding the potential acoustic impacts on key regional receptors.

The modelling methodology considered source directivity and range-dependent environmental properties likely to be encountered within the proposed survey area. Two modelling reports were commissioned, one in the preparation phase of the EP (Appendix B7a) and a second iteration during the public consultation phase (Appendix B7b). The second iteration of modelling was undertaken to specifically address an amended spatial survey layout, namely constraining sound source operation to water depths greater than 50 m. The reports provide an overview of JASCO's specialised airgun array source model and complementary underwater acoustic propagation models, receptor sound effect criteria adopted and the predicted distances to those criteria.

The first study used to inform the assessments was a numerical modelling report to establish the most appropriate sound exposure thresholds and effect level distances. This first study focused on a highly prospective area that was critical to meeting the geological objectives of the study. The second study was a similar modelling report that examined new survey plans in response to relevant persons consultation and an expanded active source area. In particular, the second study tested the effect of moving and expanding the active source area.

The first study assumed the water depth of the survey to be 40 m whilst the second study constrained the depth of the survey to greater than 50 m. Both reports are relevant to understanding the propagation of sound in the marine environment.

The first study modelled received levels of sound at eight (8) sites selected by CGG along the Otway coastline. The sites were selected were simply a range across the coastline at popular locations for swimmers and divers, and known sensitive locations for seals, white sharks, and penguins derived from primary research. The second study modelled received levels of sound at fourteen (14) sites, two of which were similar locations, that were selected based on a request from a surfing association and the Abalone Divers Council. All 24 modelled sites are relevant to the consideration of safety thresholds for marine users. The difference in the received levels of sound at these locations varies because of the different scenarios modelled.

Figure 5 (MAP-REG-EPM-089) shows the combined locations of the first study modelled locations and lines in the context of relevant areas of the activity.

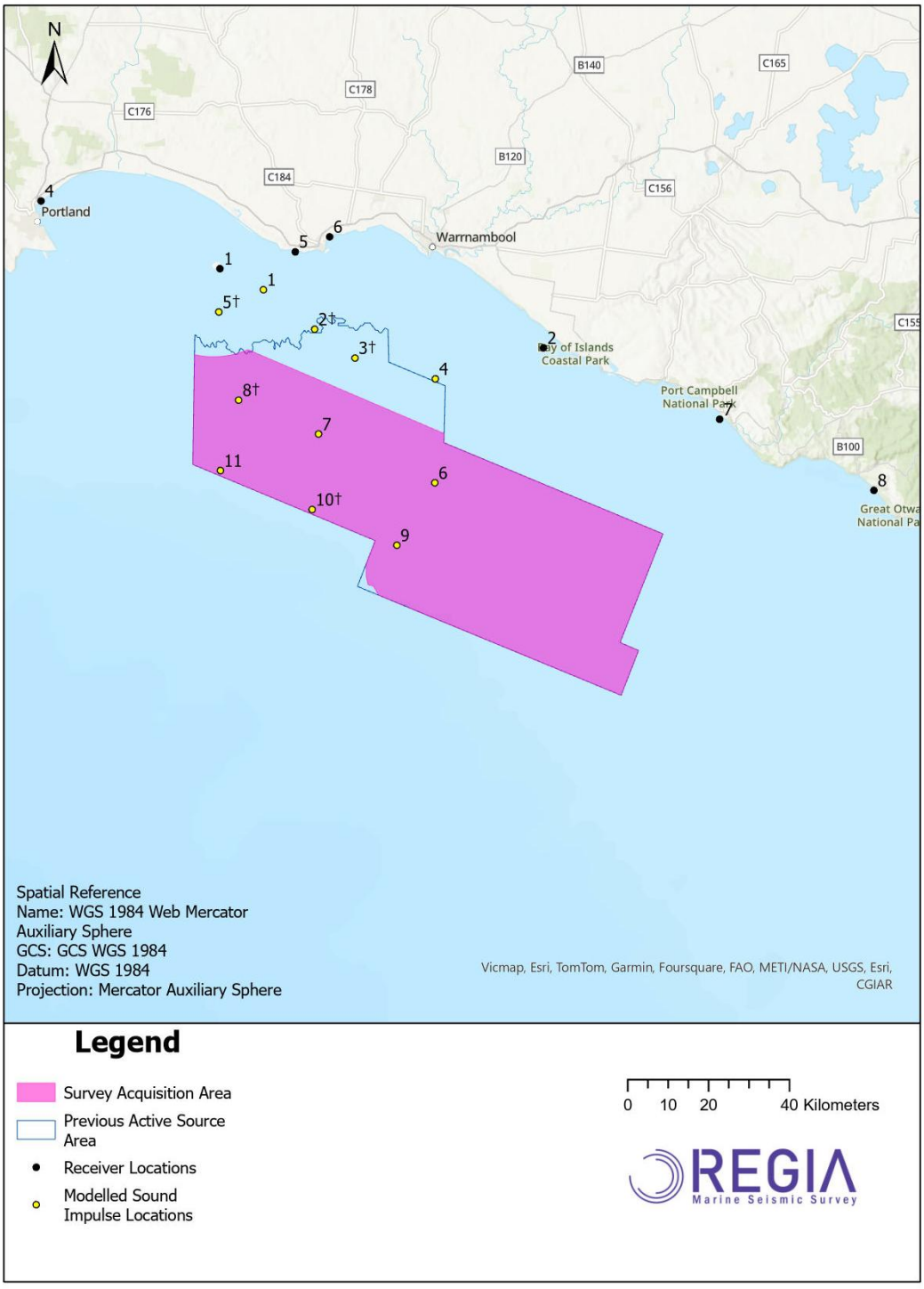
Figure 6 (MAP-REG-EPM-090) shows the combined locations of the second study modelled locations and lines in the context of relevant areas of the activity.

These two models are considered representative of the final survey design because:

- The survey parameters (volume and pressure) and source configurations (intensity, pulse duration, repetition rate) are the same as for this activity and were not varied across the studies.
- The impulse locations are across a range of depths (40 m – 174 m) and benthic substrate types and based on peer reviewed geographically relevant literature.
- Receiver locations were selected by relevant persons with activities underwater with common locations selected across the two reports to understand difference in received levels from the increase in minimum water depth.

- The seasonal variation has been considered with conservative assumptions for propagation (i.e. propagation at the best time of the year for the largest propagation distances).
- The model used has been externally validated multiple times and at least once within this geography, proving a reliable predictor of actual attenuation in the environment.
- The predictions of transmission loss (dB) over distances from the source, consider environmental variables and include frequency-specific attenuation values, as different frequencies propagate differently underwater.
- Multiple thresholds across various auditory sensitive marine fauna known to occur in the area have been modelled, also considering peak and cumulative threshold exposures where relevant.
- Precautionary assumptions that increase propagation distances have been used to account for uncertainty. For example, distances for received sound levels at defined acceptable thresholds have been applied to the whole activity, not just from the impulsive site.

Regia MSS - Regia MSS - Initial Sound Modelling Receiver and Impulse sites



On 24 October 2024, the United States National Marine Fisheries Service (NMFS) published a peer-reviewed update to its Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing. The updates include new information and changes to sound impact thresholds, which were likely to alter the ranges for predicted effects on marine mammals detailed in

previous studies. The NMFS 2024 guidance superseded the 2018 technical guidance on the same topic which was a primary piece of literature that underpinned the sound modelling reports for the Regia MSS EP.

As a result of this updated guidelines, CGG commissioned a study to assess whether the update guidance, which modified some criteria for some fauna categories, resulted in uncertainties in the modelling results which relied on the previous version of the guidance. Using the NMFS 2024 User spreadsheet tool, the study recalculates auditory injury and temporary threshold shift distances for key marine mammal hearing groups based on revised thresholds and weighting factors. The updated analysis confirms that the original modelling remains conservative, with changes to predicted impact zones generally falling within existing mitigation boundaries, including a 500 m exclusion zone. The revised criteria result in only minor increases in horizontal distances for auditory injury in low-frequency cetaceans and pinnipeds, and moderate increases for high- and very-high-frequency cetaceans under cumulative sound exposure scenarios. Despite the new insights and ongoing data gaps, particularly for species like blue whales and southern right whales, the study concludes that current mitigation strategies outlined in the Environmental Plan remain effective.

As described in Section 6.1 of Appendix B7b, the presence of unconsolidated coarse sand overlying semi-cemented calcarenite led to a more reflective seabed and likely led to large isopleths for low level thresholds, particularly in the offshore direction. However, the distribution of sand layer is not well known and if the thickness of the sand layer is not as uniform as modelled then this variability could potentially lead to smaller radii. It is possible to model a transitioning seabed type, where the sand layer mentioned above thins with distance; however, sufficient information was not available to make that discrimination to develop reliable model inputs. This transition in sediment-type was described in in-person discussions with the relevant modelling provider as the likely reason for the distance-range (2.9 km – 11.8 km).

The secondary modelling (Appendix B7b) included 15 representative sound impulse sites, including Sites 5 and 15. To better understand the extent of potential ensonification above the 160 dB re 1 µPa SPL behavioural disturbance threshold, CGG mapped the predicted ensonified areas for each site (MAP-REG-EPM-153). Despite the relative proximity of Sites 5 and 15 in the northwest corner of the survey area, the modelled ensonified zones differ significantly. This contrast strongly suggests that localised changes in substrate composition are contributing to the increased sound propagation observed in this region.

The animat model assumed no avoidance is incorporated. This input parameter was justifiable because there is not sufficient knowledge to do the alternative. Furthermore, the report does not indicate that directional travel paths were incorporated into the model. There is no reference to currents, prey distribution, or seasonal movement patterns being factored into horizontal movement described in the report. Therefore, all animat horizontal movement has been interpreted as stochastic, undirected or random within the spatial constraints.

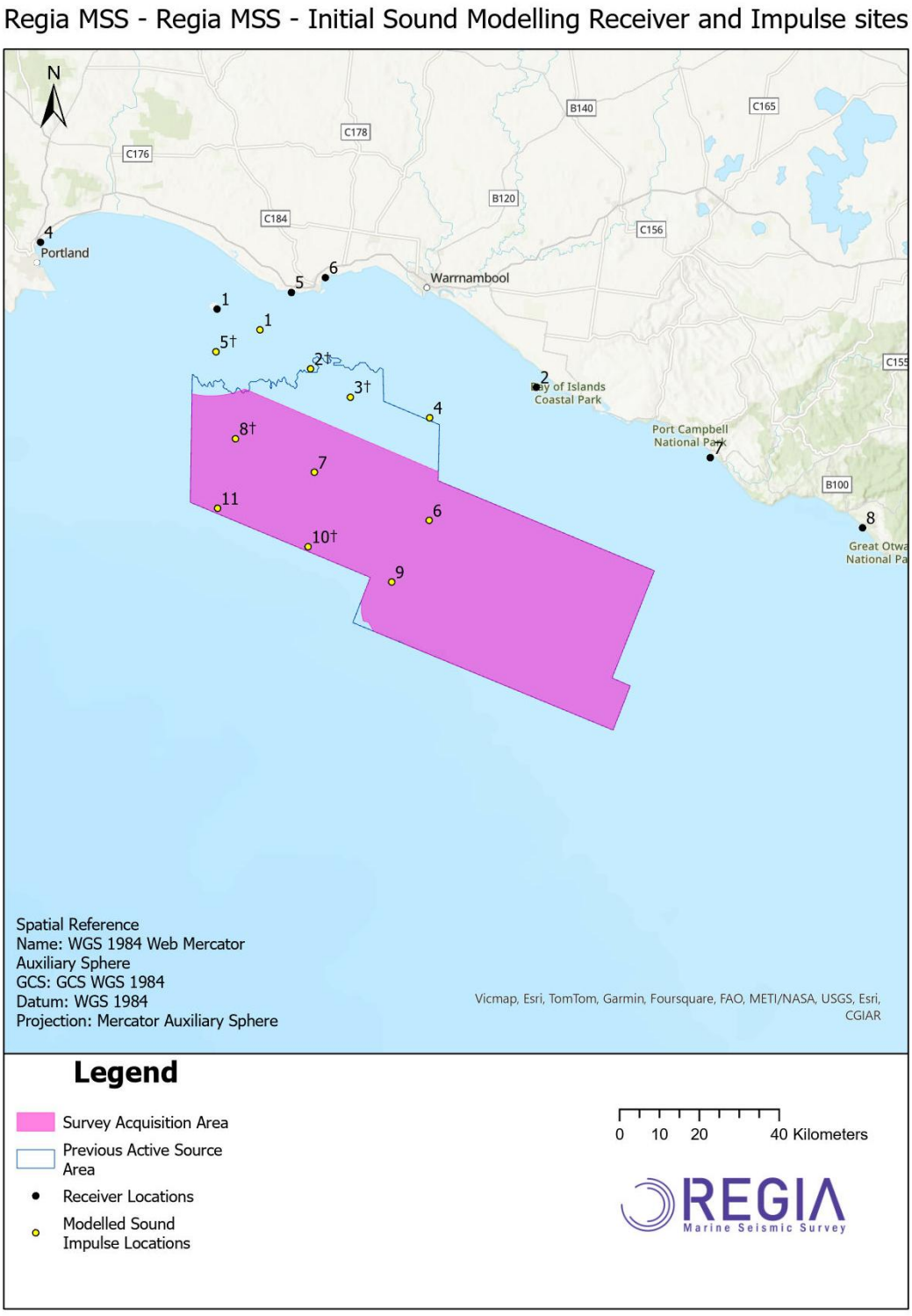
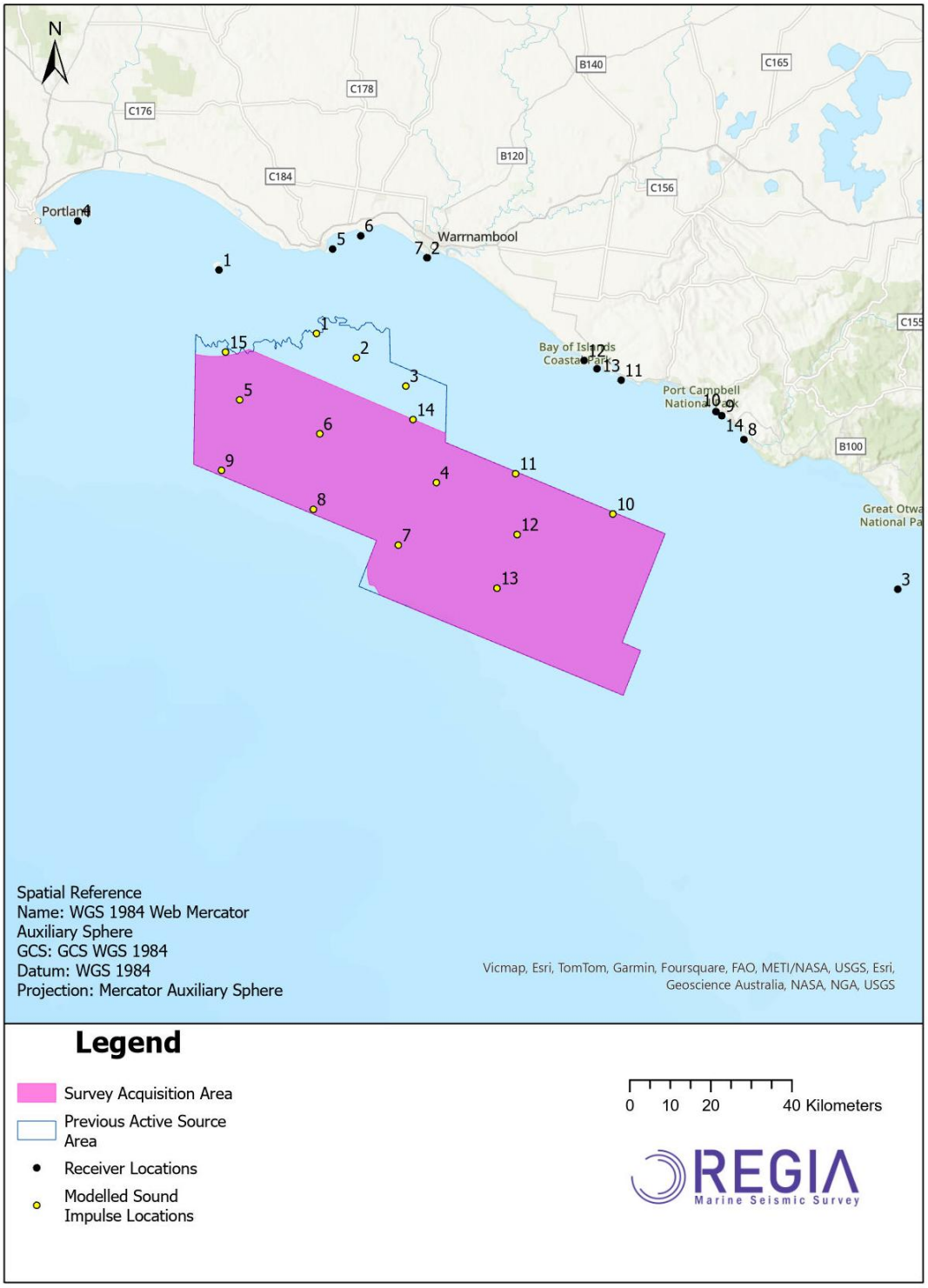


Figure 5 - Initial modelling received and impulse sites with final survey acquisition area

Regia MSS - Regia MSS - Secondary Sound Modelling Receiver and Impulse sites



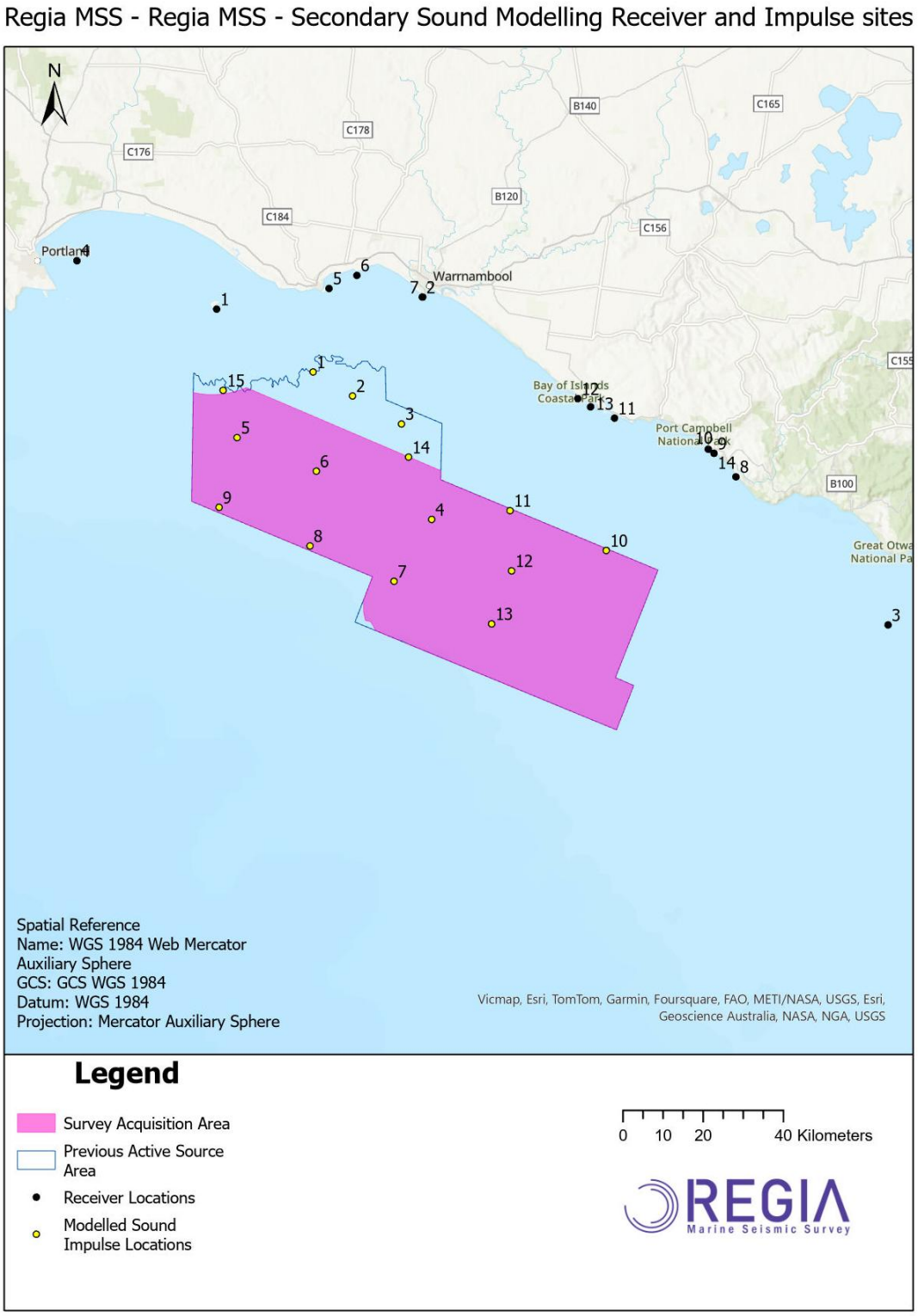


Figure 6 - Secondary modelling received and impulse sites with final survey acquisition area

7.3.2 Seismic studies literature review

CGG has conducted multiple seismic studies in Australia and globally over many years. The corpus of literature about the effects of elevated levels of sound is extensive. It can overwhelm environmental assessments with literature which doesn't directly discuss the effects predicted from a specific activity. Therefore, a separate literature review was conducted to form the foundation for the underwater sound impact assessments. Such a document is easier to keep up-to-date and streamlines the content of the impact assessments, supporting effective consultation. The seismic studies literature review was first published in May 2023, and it has been periodically updated since as new literature has been published. The seismic studies literature review is included in the EP as Appendix B8.

7.3.3 Commercial fishing history

CGG commissioned a commercial fishing review to establish the history of commercial fishing within the Environmental Planning Area and within the Activity Planning Area. This review included mapping the overlaps (or lack thereof) with commercial fishing catch data provided by:

- Australian Fisheries Management Authority from their ABARES database.
- Victorian Fisheries Authority from their catch database.

Via stakeholder consultation with DNRET it was confirmed that no Tasmanian fisheries overlap the Activity Planning Area. The report is included in the EP as Appendix B6.

7.3.4 Oil spill modelling review

CGG commissioned a detail analysis of all the oil spill models completed in the Otway region since the integration of environmental functions into NOPSEMA. For a spill model to be considered relevant to the activity it had to meet the following requirements:

- Surface release of marine diesel oil.
- Modelling thresholds align with those in the NOPSEMA Oil Spill Modelling Environment Bulletin April 2019.
- Modelling was used in an environment plan available on the NOSPEMA website.
- Modelled location is within the Regia MSS Activity Planning Area or > 20 km of the Regia MSS Activity Planning Area where the metocean conditions would be similar.

Twelve suitable models were analysed with all but one having a greater spill volume than is applicable to the proposed Regia MSS. The review found that the EPA set for the activity was suitable for the consideration of the extent of the risk (consequence) that may arise from the activity. The full report has been included in the EP as Appendix B11.

8 Assessment Stage 1

The PEIRA was the first document published about environmental impacts and risks from the Regia MSS on the Regia Consultation Hub. The PEIRA was also provided to relevant persons to communicate the cause-effect pathways created by the Regia MSS and hence, be able to identify how they may be affected, or where to ask for more information. The PEIRA identified the following planned environmental aspects that can lead to environmental impacts from the activity.

- Artificial light
- Physical presence
- Underwater sound
- Atmospheric emissions
- Planned discharges

The PEIRA also identified the following unplanned environmental aspects that can lead to environmental risks from the activity.

- Accidental release of fuel
- Accidental release of materials or waste overboard
- Introduction of marine pest species
- Collisions with marine fauna

Benthic disturbance was considered in the PEIRA, and it was concluded that if there is no anchoring during the activity there is no pathway for the activity to result in changes to benthic habitats.[4]

Having identified relevant environmental aspects of the activity and providing an initial estimate of the likely extent and duration of the aspect, the PEIRA performed a screening of these aspects with components of the environment because not all environmental aspects interact with an identified component part of the environment. A table from the PEIRA is replicated below at Table ~~7~~8. With these steps complete, there were now justified boundaries established to be able to undertake the full impact and risk assessments.

[4] Note: following updated regulatory guidance this changed in April 2025 and has been addressed below.

Table 8 - Screening of Environmental Aspects against the Components of the Environment.

		Environmental Aspects								
		Artificial Light	Physical Presence	Underwater Sound	Atmospheric Emissions	Planned Discharges	Accidental Release of Fuel	Accidental Release of Materials or Waste Overboard	Introduction of marine pest species	Collisions with marine fauna
Environment Component										
Physical Environment	Air Quality				✓					
	Ambient Light	✓								
	Ambient Sound			✓						
	Climate				✓					
	Sediment Quality						✓			
	Water Quality					✓	✓	✓		
Ecological ~~Environment~~Environment[5]	Benthic Assemblages			✓			✓	✓	✓	
	Coastal Habitats and Communities				✓		✓			
	Plankton	✓		✓	✓	✓	✓			
	Invertebrates	✓		✓	✓	✓	✓		✓	
	Fish	✓	✓	✓	✓	✓	✓	✓		✓
	Birds	✓	✓	✓	✓	✓	✓	✓		
	Marine Reptiles	✓	✓	✓	✓	✓	✓	✓		✓
	Marine Mammals	✓	✓	✓	✓	✓	✓	✓		✓
Human Environment	Coastal Development	✓					✓			
	Commercial Fishing and Aquaculture		✓				✓	✓	✓	
	Diving		✓	✓			✓		✓	
	Indigenous Culture		✓				✓	✓		
	Marine Industries		✓				✓			
	Marine Protected ~~Areas~~Areas[6]		✓				✓	✓		
	Marine Tourism		✓				✓			
	Recreational Fishing		✓				✓		✓	

[5] Ecological environment includes the presence of a listed threatened species or listed threatened ecological community, the presence of a listed migratory species, any values and sensitivities that exist in, or in relation to, part or all a Commonwealth marine area, or Commonwealth land.

[6] Marine Protected Areas includes the National Heritage values of a National Heritage place and the ecological character of a declared Ramsar wetland. The activity is not being undertaken in any part of a declared World Heritage property.

The PEIRA also completed the impact and risk assessment requirements for this EP when initial assessment indicated that the levels of impact/risk required no further assessment. Two aspects were not assessed further: planned discharges and atmospheric emissions.

8.1 Benthic Disturbance

In response to recent updates to regulatory guidance[7] the supporting operations associated with marine fauna detection and management have been more clearly described in this EP, including operations that occur outside the defined petroleum activity boundary. While the deployment of acoustic monitoring buoys is not considered a petroleum activity under Regulation 5 of the Environment Regulations, it has been disclosed and assessed in accordance with the updated expectations regarding transparency and completeness in EP submissions. Accordingly, a short assessment of benthic disturbance from anchoring is included below to address the potential for seabed interaction if deployment proceeds following the proposed trial phase.

If deployment of acoustic monitoring buoys proceeds following the proposed trial, up to three units may be deployed using clump weight and anchor systems, each with a seabed footprint of approximately 4 m^2 (including clump weight, anchor, and connecting chain). This would mean an effect area of < 12 m^2. This effect ranks as negligible under CGG's impact assessment ranking due to the extremely small, localised seabed contact, likely in unconsolidated soft-sediment environments typical of the region. The physical interaction is temporary and reversible, with no excavation, dragging, or scouring expected during placement or retrieval. The benthic habitat in this area is routinely affected by fishing, anchoring, and other disturbances and underpins a highly productive and biodiverse ecology. This is indicative of benthic habitat tolerance to these types of small-scale effects.

These impacts are occurring as a measure to detect and protect Southern Right Whales within their reproduction biologically important area. As critically endangered and culturally significant species, any effects to benthic habitats and their associated features, values, or sensitivities from anchoring are clearly an acceptable trade-off. The scale and nature of seabed disturbance is comparable to that caused by routine demersal fishing operations such as lobster potting and anchoring of small vessels, which are well established in the area and considered to pose negligible effects. There is a high degree of certainty in this assessment resulting in an uncertainty ranking of low. Given the small spatial footprint, temporary duration, and similarity to established fishing practices, the benthic disturbance from buoy anchoring is assessed as a low.

~~8.1~~8.2 Planned discharges

Impacts from planned discharges from project vessels was assessed as negligible within the PEIRA and, with the legislative requirements in Australia met, would be adequately managed by CGG's marine assurance system. With respect to planned discharges, there is no discernible difference between the planned discharges of CGG's project vessels and the hundreds of other vessels that utilise this area all year round, all of which must comply with stringent international conventions and Australian maritime laws, including Marine Orders.

~~8.2~~8.3 Atmospheric emissions

Impacts from atmospheric emissions from project vessels were assessed as negligible within the PEIRA and, with the legislative requirements in Australia met, would be adequately managed by CGG's marine assurance system. Like planned discharges, there is no discernible difference between the atmospheric emissions of CGG's project vessels and the hundreds of other vessels that utilise this area all year around.

[7] NOPTA's *Clarification of the Extended Meaning of 'Explore'* (2025) and NOPSEMA's *Petroleum Activity Guidance Note* (April 2025)

After the PEIRA was published, CGG determined that an additional support vessel may be required for the activity. This increased the total possible number of vessels involved in the activity from three to ~~four~~five. The impact assessment completed in the PEIRA for atmospheric emissions was based on three vessels and has therefore been reassessed. The estimated fuel consumption for the vessels increased from 4500 tonnes to ~~6000~~7500 tonnes and changed the estimated emissions profile as follows:

- 1.2 tonnes to ~~1.6~~2 tonnes of nitrogen dioxide (NOX)
- 0.04 tonnes to 0.~~052~~064 of sulphur dioxide (SOX)
- 110 tonnes to ~~147~~184 tonnes of carbon dioxide (CO2)

This does not change the conclusion of the impact assessment. To reiterate, the emissions from up to ~~four~~five vessels for 90 days will not significantly contribute to climate change. Impacts to ecological components of the environment from atmospheric emissions are not predicted and have not been evaluated further.

~~8.3~~8.4 PEIRA Outcomes

The PEIRA concluded that the identified environmental impacts (Table ~~8~~9) and identified environmental risks (Table ~~9~~10) be carried through for further assessment.

Table 9 - Planned environmental aspects requiring full assessment (PEIRA - Appendix B4)

Environmental Aspect	Environmental Impact	Preliminary Outcome
Artificial Light	Change in ambient light	Qualitative assessment
	Change in fauna behaviour	Qualitative assessment
Underwater Sound	Change in ambient sound	Qualitative assessment
	Change in fauna behaviour	Qualitative assessment
	Change in hearing capacity	Quantitative assessment
	Change in physical condition	Quantitative assessment
Physical Presence	Change in functions, interests, or activities	Quantitative assessment

Table 10 - Unplanned environmental aspects requiring full assessment (PEIRA - Appendix B4)

Environmental Aspect	Environmental Risk	Preliminary Outcome
Accidental Release of Fuel	Change in water quality	Low
	Change in sediment quality	Low
	Change in ecosystem dynamics	Low
	Change in physical condition	Low
	Change in fauna behaviour	Low
	Change to functions, interests, or activities	Low
	Change in aesthetic value	Low
Introduction Of Marine Pest Species	Change in ecosystem dynamics	Moderate
	Change to functions, interests, or activities	Moderate
Accidental Release of Materials or Waste Overboard	Change in physical condition	Low
	Change to functions, interests, or activities	Low
	Change in aesthetic value	Low
Collisions With Marine Fauna	Change in physical condition	Moderate

This PEIRA concluded that planned discharges and atmospheric emission needed no further assessment. The following environmental performance outcome has been set for these aspects:

- **Planned discharges and atmospheric emissions comply with maritime law.**

The following measure has been adopted so that the activity is carried out in a manner by which these environmental impacts will be of acceptable level. The following measures ensure that the environmental performance outcomes for this aspect can be met.

The following measures have been adopted to manage these impacts, and all other environmental aspects of the activity.

- CGG Acquisition Operations Manager
- Quality Control and Reporting Representative
- Environment Officer
- Marine Assurance System
- Consultation Management System
- Environment Management System

Environmental performance standards for any procedures, items of equipment, persons, or systems are set later in Stage 3.

9 Assessment Stage 2

9.1 Defining acceptable levels of impact/risk

Defining acceptable levels of impact/risk is a central requirement to demonstrating that each impact or risk is of an acceptable level. They provide the point of comparison for the predicted levels of impact or risk. As stipulated in NOPSEMA guidelines, the EP must make a comparison of the predicted levels of impact/risk against the defined acceptable levels.

CGG initially set defined acceptable levels for the activity (i.e. for all aspects). Table ~~10~~11 shows the defined acceptable levels of impact or risk for the whole activity that were set by CGG after the PEIRA was complete.

Table 11 - Defined acceptable levels for the activity.

Category	Defined Acceptable Level
Principles of ESD	The petroleum activity results in temporary / reversible, small scale, and/or low intensity environmental damage.
	The impact and risk assessment process are based on sufficient information to understand if: - Serious/irreversible environmental damage is predicted; or - The application of the precautionary principle is applied in the presence of scientific uncertainty.
	Environmental management of the activity must not be inconsistent with EPBC Act Management Plans and Recovery Plans.
Biological	Impacts and risks to biological features will be temporary / reversible, small scale, and/or low intensity environmental damage at population levels.
Ecological	Impacts and risks to ecological features will be temporary / reversible, small scale, and/or low intensity damage to the overall health, diversity, or functioning of the ecosystem.
Economic	Affected persons will not be worse off because of the activity.
Cultural	Impacts and risks to cultural features including cultural values, traditions, or practices, will be temporary / reversible, small scale, and/or low intensity.
Company	All reasonably practicable measures have been adopted to reduce environmental impacts and risks.
	Environmental impacts and risks are consistent with the CGG impact and risk assessment process such that for an impact or risk the effect/ consequence rating is medium or below.
	The implementation strategy includes specific measures to ensure that measures adopted continue to be effective in managing the impact or risk.
Social	Measures have been adopted based on the consultation process to address relevant objections and claims of relevant persons.
	The views of public have been considered in the impact and risk assessment.

During the second stage of the assessment CGG also defined acceptable levels relevant to each assessment. These secondary defined acceptable levels are more specific than those for the whole activity and the rationale for the grouping is discussed in the respective assessments. Table ~~11~~12 shows the defined acceptable levels of impact or risk sorted by each environmental aspect. Often justification for the statements defining the acceptable level is self-evident. Alternatively, the levels

have been set and justified based on scientific literature. These justifications can be found in the relevant assessment.

Table 12 - Defined acceptable levels of impact and risk

Appendix Reference	Environmental Aspect	Defined Acceptable Level
Environmental Risks		
D1	Accidental release of materials or waste overboard	Prevent any accidental release of materials or waste overboard.
		Recover any accidental release of materials or waste overboard
D2	Collisions with marine fauna	Prevent collisions with marine fauna.
		Prevent entrapment of turtles.
		Prevent collisions with Blue Whales.
D3	Introduction of invasive marine species	Prevent the introduction of any invasive marine pest species.
D4	Accidental release of fuel	Prevent any accidental release of fuel to the marine environment.
		Have comprehensive emergency response plans, aligned with the National Plan for Maritime Environmental Emergencies, in place to mitigate consequences.
		Have an Operational and Scientific Monitoring Plan in place to monitor the effects of a release of fuel to the marine environment.
Environmental Impacts		
E1	Physical presence	The activity is carried out in a manner that does not interfere with activities of another person to a greater extent than is necessary for the reasonable exercise of the rights and performance of the duties of the titleholder.
E2	Underwater Sound - Plankton	Plankton communities should not be exposed to peak sound levels of >210dB $SEL_{cum24hr}$ for longer than 12 hours.
E3	Underwater Sound - Fish	Fish and aquaculture stocks continue to be assessed as the same stock status they held prior to commencement of the activity.
		No fish should be exposed to sound at or exceeding threshold levels for greater than 12 hrs for a TTS set at 186 dB SEL_{24hr}.
E4	Underwater Sound - Invertebrates	Fish and aquaculture stocks continue to be assessed as the same stock status they held prior to commencement of the activity.
		Sound exposure to invertebrates must be below mortality/ mortal injury at thresholds in exceedance of 202 dB PK-PK.
		Sound exposure to molluscs must be below mortality/mortal injury at thresholds in exceedance of a particle acceleration rate in exceedance of 37.57 ms^{-2}
		Sound exposure to cephalopods must be below temporary threshold shifts at thresholds in exceedance of 162 dB SEL.
		Sound exposure to corals and sponges are below 226 dB PK.

Appendix Reference	Environmental Aspect	Defined Acceptable Level
E5	Underwater Sound - Birds	Diving birds can continue critical life-cycle behaviours without injury (PTS).
E6	Underwater Sound - Turtles	Sound exposure to marine turtles must be below a permanent threshold shift at thresholds in exceedance of 232 dB PK.
E7	Underwater Sound – Marine Mammals	Marine mammals can continue critical life-cycle behaviours and are not injured.
		Sound exposure to all cetaceans must be below PTS per pulse thresholds.
		Sound exposure to all cetaceans must be below PTS 24 hr SEL thresholds.
		Sound exposure to blue whales must be below temporary threshold shift (168 dB re 1 µPa SEL for more than 24 hours).
		Anthropogenic noise in biologically important areas must be managed such that any blue whale is not displaced from a foraging area.
		Sound exposure to SRW must be below temporary threshold shift (< 168 dB re 1 µPa SEL over 24 hours).
		Sound exposure to migrating southern right whale cows and calves must be below the behavioural effect threshold of 160 dB SPL.
		Sound exposure to resting southern right whale cows and calves in the reproductive BIA must be below the behavioural effect threshold of 160 dB SPL.
		Sound exposure to otariid pinnipeds must be below a permanent threshold shift at thresholds in exceedance of 232 dB PK and 203 dB SEL24h.
E8	Underwater Sound – Surfers, Divers and Swimmers	Sound exposure to coastal users is below the per-pulse safety criterion relating to amenity value of 145 dB re 1 µPa.
E9	Artificial Light	Artificial light will be managed so wildlife is not disrupted within, nor displaced from, important habitat, and is able to undertake critical behaviours such as foraging, reproduction and dispersal.
		Artificial light exposure to fish, invertebrates, and zooplankton will not exceed those produced by other marine users during nighttime operations in the region and will not cause impacts at a population level.
		Turtles continue to utilise the area without disruption to critical life-cycle behaviours.

9.2 Impact and risk ranking

Each environmental impact and risk assessment was carried out in accordance with the environmental assessment process contained in Appendix B3. The aim of each assessment was to predict the level of impact/risk, compare the predicted levels of impact to the defined acceptable levels, and to adopt measures to ensure the impact/risk will be of an acceptable level.

Each assessment was published in draft by September 2023 and CGG invited comments from relevant persons. This allowed for relevant persons to input directly into CGG's decision making with information, feedback, objections, and claims.

CGG notes that many titleholders use the UKOOA Risk Decision Framework to determine the level of societal input required in a risk assessment. Though CGG didn't use this framework explicitly, if we had done, each impact and risk would have been assessed using decision context 'C', the most inclusive of societal values. Consultation inputs to the detailed assessments have been show within each assessment.

The criteria used to rank the effect/consequence, and the uncertainty/probability can be found in Annex 1 and 2 of Appendix B3. The outcome of the risk assessment is shown in Table ~~12~~13. The outcomes of the impact assessment are shown in Table ~~13~~14.

Table 13 - Summary of Risk Assessment Outcomes of the Environmental Assessment Process.

Appendix Ref	Consequence	Likelihood	Predicted level of Risk
D1 – Accidental Release of Waste Overboard	Minor	Unlikely	Medium
D2 – Fauna Interactions	Major	Rare	Medium
D3 – Invasive Marine Species	Major	Rare	Low
D4 – Oil Spill Risk	Moderate	Rare	Medium

Table 14 -Summary of Impact Assessment Outcomes of the Environmental Assessment Process.

Appendix Ref.	Effect	Uncertainty	Predicted level of Impact
E1 – Physical Presence	Moderate	Low	Medium
E2 – Underwater Sound - Plankton	Minor	Low	Low
E3 – Underwater Sound – Fish	Minor	Medium	Medium
E4 – Underwater Sound – Invertebrates	Minor	Medium	Medium
E5 – Underwater Sound – Birds	Minor	Medium	Medium
E6 – Underwater Sound – Turtles	Minor	Low	Low
E7 – Underwater Sound – Marine Mammals	Moderate	High	High
E8 – Underwater Sound – Surfers, Divers, & Swimmers	Negligible	Low	Low
E9 – Artificial Light	Minor	Low	Low

9.3 Environmental performance outcomes and measures adopted to ensure impacts and risk will be of an acceptable level

9.3.1 Accidental release of materials or waste overboard (Appendix D1)

Appendix D1 details the risks associated with the accidental release of materials or waste overboard from the seismic and support vessel activities.

The following environmental performance outcomes were set following a comparison of the defined acceptable level with the predicted level of impact.

- **No loss of materials or wastes overboard.**
- **No death or injury to fauna, including listed threatened or migratory species, from the activity.**
- **Social, cultural, and economic features are protected, sustaining their value for people and communities.**

The following measures have been adopted so that the activity is carried out in a manner by which this environmental risk will be of acceptable level. These measures ensure that the environmental performance outcomes for this aspect can be met.

- Streamer Recovery Units
- Consultation Management System
- Petroleum SIMOPS Plan
- Adjustment Protocol
- Garbage Management System
- Support Vessel
- Garbage Management Plan
- Garbage Record Book
- OVID-Style Inspection

Details of these measures can be found in the assessment. Environmental performance standards for any procedures, items of equipment, persons, or systems are set later in Stage 3.

9.3.2 Collisions with marine fauna (Appendix D2)

Appendix D2 details the risks associated with collisions with marine fauna from seismic and support vessel activities.

The following environmental performance outcomes were set following a comparison of the defined acceptable level with the predicted level of impact.

- **No death or injury to fauna, including listed threatened or migratory species, from the activity.**
- **Social, cultural, and economic features are protected, sustaining their value for people and communities.**

The following measures have been adopted so that the activity is carried out in a manner by which this environmental risk will be of acceptable level. These measures ensure that the environmental performance outcomes for this aspect can be met.

- If the survey occurs in September, October, November or December, the acquisition lines will be acquired working from the deepest lines first.
- The seismic vessel will operate at no more than 5 knots (11 km/hr) during acquisition.
- Streamer Design Modification or Turtle Guards.
- Fauna Management Plan.

Details of these measures can be found in the assessment. The measures adopted related to the management of underwater sound also apply to mitigation of this risk. Environmental performance standards for any procedures, items of equipment, persons, or systems are set later in Stage 3.

9.3.3 Introduction of marine pest species (Appendix D3)

Appendix D3 details the risks associated with an introduction of marine pest species associated with seismic survey activities.

The following environmental performance outcomes were set following a comparison of the defined acceptable level with the predicted level of impact.

- **Prevent the introduction of any invasive marine pest species.**
- **Social, cultural, and economic features are protected, sustaining their value for people and communities.**

The following measures have been adopted so that the activity is carried out in a manner by which this environmental risk will be of acceptable level. These measures ensure that the environmental performance outcomes for this aspect can be met.

- Ballast water exchange activities will be conducted outside of Marine Protected Areas.
- No vessel movements within 5 km of the Twelve Apostles State Marine Park.
- Anti-Fouling Systems
- IMS Risk Assessment Procedure
- Vessel contractor pre-qualification assessment
- OVID-Style Inspections

Details of these measures can be found in the assessment. Environmental performance standards for any procedures, items of equipment, persons, or systems are set later in Stage 3.

9.3.4 Accidental release of fuel (Appendix D4)

Appendix D4 details the risks concerning the potential loss of containment and subsequent oil spill scenarios associated with the seismic survey operations.

The following environmental performance outcomes were set following a comparison of the defined acceptable level with the predicted level of impact.

- **No accidental release of fuel to the marine environment.**

- **Maintain arrangements to respond to an unplanned release of fuel in accordance with the OPEP.**
- **Maintain arrangements to monitor the effects of a release of fuel to the marine environment in accordance with the OSMP.**
- **Social, cultural, and economic features are protected, sustaining their value for people and communities.**

The following measures have been adopted so that the activity is carried out in a manner by which this environmental risk will be of acceptable level. These measures ensure that the environmental performance outcomes for this aspect can be met.

- Bunkering operations will not occur within 50 km of a Commonwealth or State marine park.
- Consultation Management System
- CGG Marine Assurance System
- Vessel Bunkering Procedure
- CGG Acquisition Operations Manager
- OVID Style Inspection
- Petroleum SIMOPS Plan
- Oil Pollution Emergency Plan
- Oil Spill Monitoring Plan

Details of these measures can be found in the assessment. Environmental performance standards for any procedures, items of equipment, persons, or systems are set later in Stage 3.

9.3.5 Physical presence (Appendix E1)

Appendix E1 details the impacts from the physical presence of vessels and towed equipment and their potential interference with people and communities who use, or have a connection to, the marine environment. It includes consideration of human environmental components such as commercial fishing, indigenous culture, and marine industries, and outlines the predicted level of impact the Regia MSS may have.

The following environmental performance outcomes were set following a comparison of the defined acceptable level with the predicted level of impact.

- ~~**No collisions with other marine users.**~~
- ~~**No**~~**The activity is scheduled and located to avoid exclusion of commercial fishing from known, high-effort fishing areas for more than 90 consecutive days, with no resulting adverse effects on fish stock status.**
- **As a result of the activity limitations and the adoption of the Otway Adjustment Protocol, no commercial marine user will be worse off because of the activity.**
- **Social, cultural, and economic features are protected, sustaining their value for people and communities.**
- **The activity is conducted such that environmental impacts and risks remain within the range assessed as medium or lower, with mitigation measures in place and functioning as intended.**

The following measures have been adopted so that the activity is carried out in a manner by which this environmental impact will be of acceptable level. These measures ensure that the environmental performance outcomes for this aspect can be met.

- No vessel movement within 4 nautical miles of the coast, except in case of emergency.
- No MSS acquisition beyond 200 m depth contour.
- Minimise operational activity deeper than 200m.
- No seismic acquisition in water depths shallower than 50 m
- No vessel movements with 700 m of fishing blocks G12, G13, H13, and H14.
- No anchoring permitted within the activity planning area.
- CGG Acquisition Operations Manager
- Quality Control and Reporting Representative
- Fisheries Liaison Officer (FLO)
- CGG Marine Assurance System
- Consultation Management System
- Streamer Tail Buoys
- Support Vessel
- Adjustment Protocol
- Petroleum SIMOPS Plan
- Sail Line Plan
- On-Water Communications Plan
- Sea Country Protection ~~Program~~Plan
- Communicate with other marine users

Details of these measures can be found in the assessment. Environmental performance standards for any procedures, items of equipment, persons, or systems are set later in Stage 3.

9.3.6 Underwater sound (Appendices E2 – E8)

Appendices E2 to E8 details the impacts from elevated levels of underwater sound on marine fauna and people and communities who use, or have a connection to, the marine environment.

The following environmental performance outcomes were set following a comparison of the defined acceptable level with the predicted level of impact.

- **~~The~~ ~~As a result of complying with the~~ sound source volume and activity limitations, sound emissions will not disrupt the ecological integrity of plankton communities.**
- **As a result of comply with the sound source volume and activity limitations, no impacts to plankton communities beyond 230 metres from the sound source.**
- **Social, cultural, and economic features are protected, sustaining their value for people and communities.**

- The activity is conducted such that environmental impacts and risks remain ~~stationary at full power at any time~~within the range assessed as medium or lower, with mitigation measures in place and functioning as intended.
- No change in the assessed stock status of commercial and aquaculture species during and following the activity.
- Fish will not be exposed to cumulative sound levels exceeding 186 dB SEL cum24hr for more than 24 hrs.
- **There will be no measurable change to biomass attributable to the activity as measured through annual VFA or AFMA Stock Assessment Reports.**
- **No death or injury to fauna, including listed threatened or migratory species, from the activity.**
- ~~Sound source~~As a result of shutting down or relocating the sound source when whales enter shutdown ~~when~~ zones, no physical injury or sustained interference with marine mammal lifecycle behaviours occurs during the activity.
- As a result of complying with the activity limitations and environmental performance standards in place to protect threatened whales, environmental impacts and risks associated with the activity are managed in a manner that is demonstrably consistent with ecologically sustainable development principles.
- As a result of shutting down or relocating the sound source when a blue whale is observed within 10 km, blue whales will not be behaviourally disturbed within this range, leading to the protection of important foraging areas and avoidance of displacement.
- As a result of implementation of the suite of mitigation measures, SRW are not exposed to sound levels that result in auditory impairment or displacement from BIAs or HCTS.
- As a result of the implementation of realtime monitoring and activity limitations, SRW are not exposed to sound levels that cause sustained behavioural disturbance within or adjacent to BIAs or HCTS.
- As a result of shutting down the sound source when:
  - **any cetacean is observed within 500 ~~m of the sound source.~~ metres, and**
  - ~~Sound source shutdown when~~ **any ~~LF~~Flow frequency cetacean ~~is~~ observed within 5.07 km of the sound source for more than 12 hours~~.~~**

  ~~Sound source shutdown if~~cetaceans will not be exposed to sound levels associated with auditory injury.
- As a result of shutting down the sound source when any SRW is observed within 10 km, any SRW will not be exposed to sound levels that could cause behavioural disturbance, leading to the protection of biologically important behaviours such as resting, socialising, or calving and the ongoing utilisation of BIAs and HCTS.
- As a result of implementing shutdown or relocation procedures when **a blue whale remains ~~resident in~~within the 23 km ensonified area for more than 12 hours~~.~~, blue whales will not be exposed to physical injury from sound exposure.**
- ~~Sound source~~As a result of implementing **shutdown ~~if~~or relocation procedures when a SRW remains resident in the 15 km ensonified area for more than 12 hours, SRW will not be exposed to auditory impairment.**

- ~~Sound source shutdown if a SRW cow and calf pair are observed within 10 km from the sound source.~~
- ~~Sound source shutdown if a blue whale is observed within 10 km of the sound source.~~
- ~~No disturbance to resting SRW in the reproductive BIA.~~
- As a result of the implementing the suite of mitigation measures, marine mammals experience auditory injury or sustained behavioural disturbance affecting survival, reproduction, or population distribution.
- **Received sound levels at coastal areas accessible by coastal users will not exceed the human health safety criterion relating to amenity value.**

The following measures have been adopted so that the activity is carried out in a manner by which this environmental impact will be of acceptable level. These measures ensure that the environmental performance outcomes for this aspect can be met.

- Sound will not be emitted above the stated capacity.
- The sound source will only be discharged in the Pygmy Blue Whale foraging BIA when low numbers (as defined by Whale Expert Panel) of Pygmy Blue Whales and other foraging whales are in the BIA off Otway.
- Operate the sound source at low power during line turns and if transiting between survey lines anywhere in the Operational Area.
- No discharge of the sound source within 15 km of the Southern Right Whale Reproduction BIA or Habitat Critical to Survival (HCTS) while Southern Right Whales are present in the BIA and HCTS.
- No discharge of the sound source within 17 km of Lady Percy Julia Island / Deen Maar.
- If the survey occurs in September, October, November or December, the acquisition lines will be acquired working from the deepest lines first.
- If the survey occurs in April, May or June, the acquisition lines will be acquired working from the shallowest lines first.
- No discharge of the sound source in January, February, March.
- Survey Environment Advisor
- Environmental Officer
- Marine Fauna Observers
- Passive Acoustic Monitoring Operator
- Relief PAM/MFO Observer
- Acoustic Detection Monitoring Operator
- Whale Expert Panel
- Officer of the Watch
- Spotter Vessel
- Acoustic Detection Unit(s)
- Pre-survey and aerial surveillance procedures

- Pre-Start Up Procedure
- Start-up Procedures
- Start-up delay procedures (if sighting)
- Operating Procedure
- Shutdown procedures
- Night-time and low visibility procedures
- Helicopter Operation Procedure
- Marine fauna detection and observation zone of 23+ km horizontal radius from the seismic source
- Ramp up of sound source to full power over 30 minutes.
- Reduce the sound source to low power if flocks of foraging birds are observed within 500 m of the source.
- Fauna Management Plan.
- Sail Line Plan.
- Accountability for implementation of the Fauna Management Plan procedure.
- Provide sufficient resources to implement the FMP.
- Convene and coordinate the Whale Expert Panel as needed.
- Coordinate and document the review of effectiveness and compliance with the FMP.
- A review of the effectiveness and compliance with the FMP will be undertaken within one week of commencement of the Regia MSS and thereafter every four weeks while the Regia MSS is being undertaken.
- Ensure the Regia MSS induction provides an overview of the FMP.

Details of these measures can be found in the assessment. Environmental performance standards for any procedures, items of equipment, persons, or systems are set later in Stage 3.

9.3.7 Artificial light (Appendix E9)

Appendix E9 details the impacts from elevated levels of artificial light on changes in fauna behaviour including birds, fish, invertebrates, plankton, and turtles in the marine environment.

The following environmental performance outcomes were set following a comparison of the defined acceptable level with the predicted level of impact.

- **Biologically important behaviours within a BIA or outside a BIA can continue while the activity is being undertaken.**
- **Light emissions will be reduced to minimum levels for safe operations and navigation in accordance with the Vessel Lighting Management Plan.**
- ~~**No disruption to critical life-cycle behaviours.**~~
- **Light emissions are managed to avoid displacing turtles or disrupting nesting, foraging, or migratory behaviours within or near biologically important areas.**

- **Social, cultural, and economic features are protected, sustaining their value for people and communities.**
- **The activity is conducted such that environmental impacts and risks remain within the range assessed as medium or lower, with mitigation measures in place and functioning as intended.**

The following measures have been adopted so that the activity is carried out in a manner by which this environmental impact will be of acceptable level. These measures ensure that the environmental performance outcomes for this aspect can be met.

- CGG Marine Assurance System
- Survey Environment Advisor
- Sail Line Plan
- Vessel Lighting Management Plan
- OVID-Style Inspection
- Light Minimisation
- Minimise non-essential lighting
- Activity Specific Induction

Details of these measures can be found in the assessment. Environmental performance standards for any procedures, items of equipment, persons, or systems are set later in Stage 3.

9.4 Appropriateness of environmental assessments

The environmental impact and risk assessments are considered appropriate to the nature and scale of the activity because they:

- Follow a Recognised Framework: The analysis utilise a methodology aligned with international standards and regulatory frameworks, ensuring robustness and completeness.
- Are Comprehensive: CGG have addressed all relevant environmental aspects and their potential impacts or risks, from minor to significant.
- Incorporate Best Available Information: Used the latest and most relevant scientific data and relevant person input for assessments.
- Ensure Transparency: Clearly documents all steps, from scoping to conclusion, allowing for relevant person review and verification.
- Define Mitigation Measures: The documents each proposes effective mitigation and management measures for identified impacts or risks.
- Meet Legal Requirements: Aligns with legislative and regulatory obligations, ensuring compliance.
- Facilitate Decision Making: Provides a clear basis for informed decision making by CGG, regulators, and other stakeholders.

Each assessment has been publicly available since September 2023. Whilst there have been general comments raised, there have been no direct comments received related to the matters upon which CGG invited feedback with the exceptions discussed below.

During consultation there was some criticism that the environmental assessments were inadequate because they did not consider cumulative effect properly and bifurcated the aspects of the activity rather than consider them holistically (Event ID 3697). CGG considered that cumulative impacts were properly considered because the existing environment step in each analysis was carried out considering the existing and future pressures on the environment. However, CGG also recognised they could assess reasonably foreseeable activities in more detail. This led CGG to work with other titleholders known to be proposing petroleum activities in the region to prepare a Cumulative Impact Assessment which was published on submission for public comment (Appendix F1).

CGG also received criticism about the bifurcation of the assessment by considering each environmental aspect in isolation. CGG acknowledges that the process and format of the assessments led to relevant persons who had concerns about specific receptors (Event ID 3697) not being able to get a holistic picture of the effects on that receptor easily. This led CGG to complete further assessment of key environmental values and sensitivities so that impacts could be considered holistically (Appendix F3).

Similarly, relevant persons looking for holistic assessments of the activity's consistency with the principles of ESD (Event ID 3697) wanted an improved assessment of this matter. This was completed in Appendix F4 as part of the demonstration that all impacts and risks of the activity are of an acceptable level.

10 Assessment Stage 3

The third and final stage of assessing the environmental impacts and risks was to consider them holistically regarding the EP acceptance criteria and whether the impacts and risks of the activity will be of an acceptable level and reduced to ALARP. This stage of the assessment also deals with impact and risk treatment. The process for setting environmental performance for the activity is outlined below and the outputs from that process captured in Appendix G1.

In addition, following completion of the impact and risk assessments in the previous assessment stage, CGG decided two further (stage 3) assessments were necessary. They were a dedicated cumulative impact assessment and a further assessment of key environmental values and sensitivities.

and documents were prepared to support the demonstration that environmental impacts and risks of the activity are reduced to ALARP and will be of an acceptable level. These documents were simultaneously prepared and have been summarised below. They have been included in the EP.

10.1 Cumulative Impact Assessment (Appendix F1)

Cumulative impacts were inherently considered in Stage 2 of the environmental assessments by virtue of considering the existing environment as a dynamic place inclusive of other natural and anthropogenic pressures. Specifically, the effects of past projects and activities, and currently operating projects, are captured when describing the existing condition of environmental values and sensitivities, inclusive of any pressure or threats affecting that value or sensitivity.

This baseline condition and understanding of the capacity of the receiving environment and receptors to accommodate changes, considering existing pressures and threats, informs the environmental impact assessments conducted in the **PEIRA** and more extensively in Appendices E1 – E9.

However, during consultation in preparation of the Environment Plan (EP), explicit consideration of future activities in the context of cumulative impacts was requested.

There are many ways of considering cumulative impacts and the following guidelines have been used as the basis of this assessment:

- United Kingdom National Infrastructure Planning Advice Note Seventeen: Cumulative effect assessment relevant to nationally significant infrastructure programs (UK Gov 2019)
- New South Wales Cumulative Impact Assessment Guidelines for State Significant Projects (NSW 2022).

Both guidelines are intended to apply to large-scale national and state significant projects, respectively which have a greater potential for long term cumulative impacts than the Regia MSS. The guidelines are rigorous and have merit for application to the shorter-term, smaller scale, Regia MSS.

Table ~~14~~15 shows the projects and activities that are reasonably foreseeable within the spatial and temporal extent of the assessment. These are fully assessed in Appendix F1.

Table 15 - Reasonably foreseeable ongoing and future projects and activities in the offshore Otway region.

Titleholder	Activity Type	Status	Window (Activity)
Beach Energy	Production - Thylacine	Ongoing	Ongoing
Beach Energy	Production - Geographe	Ongoing	Ongoing
Cooper Energy	Production – CHN	Ongoing	Ongoing
ConocoPhillips Australia	Otway Drilling	Proposed	2024-2028 (Typically, 30-40 days per well, max 6 wells)
Cooper Energy	Production Drilling and tie-in	Proposed	2024-2026
Woodside Energy	Minerva Decommissioning	Proposed	2024-2025 (< 2 months)
Beach Energy	Drilling and tie-in	Proposed	2024-2027
CGG	Seismic Survey (Regia MSS)	Proposed	2023-2028 (60 days)
Beach Energy	Seismic Survey (Calico MSS)	Proposed	2025 (Between February and May)

10.2 Further Assessment of Key Values and Sensitivities (Appendix F3)

Appendix F3 was part of Stage 3 of CGG's assessment of the environmental impacts and risks arising from the Regia MSS. The document provides further assessment of key environmental values and sensitivities. The key environmental sensitivities were selected following a self-assessment by CGG of whether the PEIRA and the Stage 2 assessments resulted in all environmental impacts and risks being reduce to ALARP and an acceptable level, and the criteria for acceptance being met. Further assessment was required because:

- CGG self-identified that the result of the environmental assessment:
  - Had some residual predictive uncertainty about whether impacts or risks were of an acceptable level; and/or
  - Contained environmental values and sensitivities (species) of key importance due to their protection status or commercial value; and/or
- Consultation with relevant persons revealed a particular value or sensitivity required further attention and material to support the consultation.

The content aims to demonstrate that a thorough assessment of environmental values and sensitivities that may be affected by the activity has been undertaken. Further assessments carried out by CGG and the reasons for them are in Table ~~15~~16.

Table 16 – Further assessments carried out as part of the Stage 3 assessment.

Further Assessment Topic	Reasons for Further Assessment	Relevant Consultation ID's
Southern Right Whales / Koontapool (*Eubalaena australis*)	The species is listed as threatened (Endangered) under the EPBC Act. The species was identified as culturally important.	Event ID's 653, 3237, 3384, 3697, 3678, Person ID 1163
Blue Whales / Wuulok (*Balaenoptera musculus*)	The species is listed as threatened (Endangered) under the EPBC Act. The species was identified as culturally important.	Event ID's 3697, 653, 2901, 3384, and Org 181
Australian Sea Lion (*Neophoca cinerea*)	The species was identified to be of concern to relevant persons.	
Little Penguin (*Eudyptula minor*)	The species was identified to be of concern to relevant persons.	
Southern Rock Lobster (*Jasus edwardsii*)	The species was identified as of key commercial value. The impacts of elevated levels of sound were identified as one of the few to have permanent physiological effects. The species was identified to be of concern to relevant persons.	Event ID's ID 2774, 3228, 653, 1742, 2886, 1529, 4107, 1815
Giant Crab (*Pseudocarcinus gigas*)	The impacts of elevated levels of sound were identified as one of the few to have permanent physiological effects. The species was identified to be of concern to relevant persons.	Event ID's 653, 1742, 1892
Glass Eels / Kooyong (*Aquilla australis*)	The species was identified as culturally important.	Event ID's 3697, 3237, 3678
Gould's Squid (*Nototodarus gouldi*)	The species was identified to be of concern to relevant persons.	Event ID's 3237, 4107
Pale Octopus (*Octopus pallidus*)	The species was identified to be of concern to relevant persons.	Public Comment Matter F11, F12
Blacklip Abalone (*Haliotus rubra*)	The species was identified to be of concern to relevant persons.	Event ID's 906, 908, 948, 1742, 2078, 2093, 2095, Public Comment Matter F1, F12, F16, F17
Pink Snapper (*Chrysophrys auratus*)	The species was identified to be of concern to relevant persons.	Public Comment Matter F11, F12, F19
King George Whiting (*Sillaginodes punctatus*)	The species was identified to be of concern to relevant persons.	Event ID 4355, 4433, Public Comment Matter F12, F14, F19
Plankton Communities and the Bonney Upwelling System	The impacts of elevated levels of sound were identified as one of the few to have permanent physiological effects. The species was identified to be of concern to relevant persons.	Event ID's 3697, 3182, 3237, 3384

Further Assessment Topic	Reasons for Further Assessment	Relevant Consultation ID's
Spawning Patterns	The value was identified to be of concern to relevant persons.	Event ID's 1529, 2774, 2886)
Budj Bim Cultural Landscape	This sensitivity was identified as culturally important by relevant persons.	Event ID 4469
Cultural Features of the Environment	This sensitivity was identified as culturally important by relevant persons.	Event ID 4469, 1891

The findings of Appendix F3 demonstrate that CGG has thoroughly assessed the impacts of the Regia MSS to these environmental values and sensitivities and can itself be satisfied that through the implementation of mitigation measures and activity limitations, impacts and risks of the activity will be of an acceptable level. As a result, no further assessment or mitigation is recommended.

10.3 ALARP Assessment (Appendix F2)

The **ALARP** assessment for the Regia MSS serves as a critical component of our commitment to responsible environmental management and risk reduction. CGG recognise the significance of safeguarding the marine environment and reducing environmental impacts and risks. The ALARP Assessment is found in Appendix F2.

The primary objective of the ALARP assessment is to systematically evaluate the impacts and risks associated with the activity, ensuring that CGG operate within a framework that prioritises safety, environmental protection, and compliance with relevant regulations. The assessment focuses on identifying control measures and strategies that can reasonably and effectively reduce risks to the lowest practicable level.

CGG has adopted a structured approach to the ALARP assessment, which includes defining the scope and objectives, identifying hazardous activities and associated risks, evaluating initial control measures, assessing feasibility, and exploring alternative, additional, or improved control measures.

The following risks were put through the ALARP assessment:

- Accidental release of materials or waste overboard.
- Collisions with marine fauna.
- Introduction of marine pest species.
- Accidental release of fuel.

The following impacts were put through the ALARP assessment:

- Change to benthic habitat from **anchoring.**
- Change to local air quality, climate, or ecosystem dynamics from **atmospheric emissions.**
- Change to water quality, fauna behaviour, or physical condition from **planned discharges.**
- Change to the functions, interests, and activities from **physical presence.**
- Change in fauna behaviour, hearing capacity, or physical condition from **underwater sound.**
- Change in fauna behaviour from **artificial light.**

Appendix F2 concludes that the Regia MSS can be carried out in a manner that this evaluation demonstrates will reduce environmental impacts and risks of the activity to ALARP. CGG has reduced

the spatial and temporal design parameters of the activity, and considered additional, alternative, and improved management and mitigation measures to arrive at a point that further analysis would not materially further reduce environmental impacts and risks.

10.4 Acceptable Levels Assessment (Appendix F4)

In Appendix F4, CGG has put forward its case that the environmental impacts and risks of the activity are of an acceptable level because:

1. All environmental impacts and risks have been identified and assessed.
2. Lower order impacts and risks have been screened and eliminated or managed.
3. Higher order impacts and risks have been assessed by:
    a. Gathering knowledge about relevant environmental values and sensitivities, including through extensive consultation.
    b. Defining acceptable levels for the activity and, more specifically, for environmental values and sensitivities.
    c. Predicting the levels of impact and risk.
    d. Evaluating the effectiveness of measures that protect the environment.
4. Activity limitations comprehensively bound the activity and the environmental assessment.
~~4.~~5. Predicted impacts and risks of the activity have been compared to acceptable levels of impact.
~~5.~~6. The titleholder has considered predictive uncertainty in the environmental assessments.
~~6.~~7. The environmental assessments are appropriate to the nature and scale of the activity.
~~7.~~8. Once managed, no pathways to unacceptable impacts were identified.
~~8.~~9. The proposed activity will comply with the requirements of the EPBC Act.
~~9.~~10. The proposed activity is consistent with the principles of ecologically sustainable development.

Each of these reasons is explained, in detail, in Appendix F4. They demonstrate that environmental impacts and risks arising from the activity are of an acceptable level.

10.5 Environmental Performance

This section outlines the process followed to set appropriate environmental performance outcomes and standards.

There are five groups of management and mitigations measures specified in this EP. These are defined as follows:

Activity Limitations: A measure that constrains, limits, or otherwise restricts the activity such that impacts and risks can be avoided, or lessened to or below acceptable levels. The final list of enforceable activity limitations can be found in Appendix A2.

Control Measures: A system, an item of equipment, a person or a procedure, that is used as a basis for managing environmental impacts and risks of an activity. The control measures adopted for the Regia MSS can be found in Appendix G1.

Environmental Performance Standard: A statement of the performance required of a control measure. The environmental performance standards for adopted control measures can be found in Appendix G1.

Legislative Requirement: A requirement of law, regulation, or guideline that applies to the activity and is relevant to the environmental management of the activity. Legislative requirements can be found in Appendix B2.

Management System Element: A responsibility, practice, process, or resource used to manage an environmental aspect of the activity, including monitoring and review of environmental performance. The management system elements can be found in Appendix B3, noting that the Environmental Management System is a control measure and thus its environmental performance is also discussed in Appendix G1.

10.5.1 Environmental Performance Outcomes

Environmental Performance Outcomes (**EPOs**) were set out at the conclusion of the second stage of the CGG environmental assessment process. The environmental performance outcomes were set having had regard to the defined acceptable levels of impact and risk within the various environmental assessments. They provide the link between the defined acceptable levels and the practical management of the activity and are achieved through the adoption of measures that protect the environment. The EPO are shown in the environmental performance tables in Appendix G1. The measurement criteria are what CGG will use to determine whether each **EPO** is being met.

Measuring outcomes often comes with an expectation of environmental monitoring, often in terms of ecologically or biologically relevant indicators that provide scientific confirmation of the accuracy of the predicted impacts. However, in many cases, especially where impacts are transient, widespread, or difficult to observe directly (e.g. impacts to plankton or behavioural responses of mobile fauna), monitoring inputs and processes provides a more practical, reliable, and enforceable means of demonstrating compliance with environmental performance outcomes.

Why Monitor Inputs and Processes?

Monitoring direct environmental outcomes often requires intensive field studies, specialised personnel, and extended timelines which may not be proportionate to the scale or significance of the impact. In contrast, input and process monitoring can be integrated into normal operations. Titleholders have direct control over inputs (e.g. sound source settings, vessel lighting, exclusion zones) and how procedures are implemented (e.g. shutdown protocols, observer coverage), making them reliable indicators of performance. They are also more straightforward to verify through

documentation, audits, and operational data. By focusing on the factors that influence outcomes, input and process monitoring supports a preventive approach, reducing harm before it occurs.

Under the Offshore Petroleum and Greenhouse Gas Storage (Environment) Regulations 2009, environmental performance must be demonstrated through evidence that impacts and risks are reduced to ALARP and acceptable levels. Monitoring the effective application of mitigation measures (e.g. source verification, vessel positioning, lighting management) is a valid way to show that environmental performance outcomes are being met.

10.5.2 For many valued environmental receptors — such as plankton, megafauna, or transient fish stocks — impacts may be diffuse or unobservable in the short term. Monitoring inputs such as sound source output and comparing against scientifically derived thresholds provides a defensible proxy for assessing whether unacceptable impacts are likely. Environmental Performance Standards

At the conclusion of the third stage of CGG's environmental assessment process there is now a complete list of the measures required to manage environmental impacts and risks to ALARP and to an acceptable level.

For control measures (systems, items of equipment, procedures, and persons), CGG is required to set environmental performance standards (**EPS**). These are statements of performance that set the level of performance required of a control measure in managing an impact or risk. The measurement criteria are what CGG will use to determine whether each **EPS** is being met.

The **EPS** function as self-imposed conditions of approval and form the basis of compliance monitoring and reporting. Any inconsistencies that may be found in other parts of the EP are considered superseded by the tables in Appendix G1. Such inconsistencies that remain in the EP are either an artefact from the passage of time due to the iterative nature of the process, or an unintentional error.

10.5.3 Environmental Performance Tables

The tables in Appendix G1 set out environmental performance for the activity. Environmental performance standards are set for the control measures adopted in the respective impact and risk assessments. It is good practice, and required by NOPSEMA's decision making guideline, to check to ensure that the EPO's set for the activity are clearly linked to the environmental aspects of the activity. Therefore, each of the performance tables link to either:

- Management of the activity.
- Management of the planned aspects of the activity (Impacts).
- Management of unplanned aspects of the activity (Risks).

Every environmental aspect has at least one EPO.

10.5.4 Appropriateness of Environmental Performance

An appropriate level of environmental performance has been set because CGG has effectively balanced the operational objectives of the survey with the need to protect marine ecosystems and species through the reduction of environmental impacts and risks. The environmental performance of the Regia MSS is appropriate because the activity:

- Complies with environmental management law by adhering to all relevant local, national, and international environmental laws and guidelines to ensure that the survey operations are legally compliant.

- Minimises impacts and risks to social, economic, and cultural features of the environment by implementing strategies to manage interactions arising from the activity.
- Will be continuously monitored in real-time and has measures in place to escalate protections and to adapt strategies in response to unexpected changes or discoveries from observations in the field.
- Has mechanisms for involving local communities, environmental groups, and other relevant persons in the ongoing planning and execution phases of the survey.
- Implements effective mitigation measures to offset negative economic effects on commercial fishers if impacts are unavoidable.
- Ensures that the survey can be carried out in a manner whereby environmental impacts and risks of the activity can be reduced to ALARP and be of an acceptable level.

CGG has tried to not only meet the minimum requirements for environmental protection but also demonstrates a proactive and responsible approach to preserving marine life.

This report has been prepared to ensure that the Regia MSS EP provides for appropriate environmental performance outcomes, environmental performance standards, and measurement criteria. Prior to submitting this EP, the test for CGG was whether the proposed environmental performance has fulfilled its function under the legislation and there is confidence that the Regia MSS can be carried out in accordance with the objects of the Regulations.

11 EP Summary Conclusion

The environmental assessment process used is clear, systematic, defensible, and reproducible, demonstrating how environmental impacts and risks will be of an acceptable level and reduced to ALARP. Relevant legislative requirements including but not limited to applicable plans of management, recovery plans, conservation advice and other guidance for matters protected under the EPBC Act, and the principles of ecologically sustainable development as defined under the EPBC Act, have been properly considered.

The process applied in the environmental assessments is commensurate with the nature and scale of the activity and the severity of its impacts and risks because the EP has:

- Applied a process that has driven CGG to apply more effort and rigour to evaluations where there is a higher degree of scientific uncertainty in predictions of impacts and risks and/or severity of potential consequence of impacts and risks.
- Includes appropriate and accurate content to demonstrate that the proposed activity is not inconsistent with a recovery plan or a threat abatement plan for a listed threatened species or ecological community.
- Appropriately identified, acknowledged, and addressed areas of uncertainty in predictions of impact and risk.
- Adopted a precautionary approach (e.g. conservative 'worst-case' approach) for those impacts and risks involving greater uncertainty including but not limited to additional assessment of key environmental matters.
- Provided reasoned conclusions that impacts and risks will be acceptable or managed to acceptable levels with the implementation of suitable control measures to either reduce the consequence/severity or likelihood of environmental impacts and risks.
- Regard for relevant scientific papers, recovery plans for listed threatened species and good practice guidance for the management of impacts and risks when making the case that impacts and risks will be managed to acceptable levels.

The EP has provided further assessment of all environmental impacts and risks of the activity to threatened and migratory whales to show that they will be of an acceptable level because the EP is not inconsistent with the Conservation Management Plans for the Blue Whale and Southern Right Whale. In making this conclusion, CGG has:

- Had regard to the Guidance on Key Terms within the Blue Whale Conservation Management Plan (2021) and Blue Whale Conservation Management Plan – FAQs published by NOPSEMA, Department of Sustainability, Environment, Water, Population and Communities, Marine Bioregional Plan for the North-west Marine Region, Department of the Environment, Water, Heritage and the Arts, EPBC Act Policy Statement 2.1 – Interaction between offshore seismic exploration and whales: Industry Guidelines (September 2008).
- Adopted all Part A management measures as described in Policy Statement 2.1, as well as adoption of additional Part B measures, which reflected a precautionary approach to managing the risks and impacts of the activity.
- Set an acceptable level of impact for underwater noise impacts on whales which is compared to the predicted level of impact, derived from comparing noise modelling studies with published studies on the distribution and abundance patterns of whales to demonstrate that the environmental impacts of the activity will be managed to an acceptable level.
- Undertaken noise modelling studies, including ANIMAT modelling for southern right whales and blue whales (Appendix B7), which is based on appropriate and representative inputs in relation to the seismic sound source and blue whale movement patterns, and provides realistic effect ranges for mobile marine fauna such as blue whales.

- Examined concerns raised during the consultations about the ANIMAT modelling not being a suitable foundation for the environmental impact assessment of underwater noise impacts on whales and that, as a result, impacts may exceed the acceptable level of impact. After examination of these claims by various experts CGG determined that the inputs and methods of the ANIMAT modelling were suitably conservative and representative to inform the evaluation of impacts. In addition, the commitment to an effective range of control measures (see below) adds an additional level of conservatism that will ensure impacts are managed to an acceptable level.
- Areas of uncertainty in predictions which are addressed by the activity limitations implemented and the control measures adopted, including a commitment to cease acoustic emissions immediately if a southern right whale/blue whale (or possible southern right whale/possible blue whale) is detected within ~~detectable~~defined distances (these distances are extended beyond the distance at which noise can exceed thresholds known to cause behavioural disturbances.
- Evaluated and accepted the addition of a spotter vessel with trained and experienced MFOs to extend the range of observation and provide an additional independent observation line of evidence.
- Considered responses received from relevant persons in relation to effectiveness of MFO and PAM operators and concluded, CGG will include an additional MFO / PAM operator to ensure fatigue management is appropriately addressed with allowance for 24/7 coverage. In addition to the two MFOs on the seismic vessel, two dedicated, trained and experienced MFOs will be always onboard a dedicated spotter vessel. In addition, officers of the watch on the attending support vessels will be trained to identify whales during daylight hours to support the visual detection of marine mammals. [Paragraph updated in response to Matters: M43, M45 and M49].
- The method applied to demonstrate that the environmental impacts and risks of the activity from acoustic emissions to threatened and migratory whales is based on:
  - a description of whale distribution, abundance, and behaviour in the ensonified area.
  - contemporary science on effects of noise on whales, source, and location specific acoustic modelling.
  - Policy Statement 2.1 control measures as well as consideration of other commonly used and known control measures for whale detection and mitigation and so is systematic, defensible, and reproducible.
- Considered the potential for permanent and temporary threshold shifts in hearing, behavioural disturbance, and masking due to underwater noise exposure and any subsequent potential impact to individual fitness and population viability. The evaluation for this topic is more detailed than for other environment receptors and so is commensurate to the predicted magnitude of impacts and risks to listed threatened and migratory whale species that may be encountered.
- Evaluated the potential impacts to planktonic food sources and potential foraging activity of pygmy blue whales within their distribution range and excluded likely areas of higher densities of food sources along the canyon structures inclusive of the West Tasmanian Canyons Key Ecological Feature and other canyon structures deeper than 400m in Victorian waters. As such, there is limited potential for impacts to biologically important behaviours of pygmy blue whales.
- Addressed impacts and risks from underwater noise to baleen and odontocete whales, including both mid-high frequency cetaceans and low frequency cetaceans. It details the modelling which predicts that noise levels associated with Permanent Threshold Shift (PTS) and Temporary Threshold Shifts (TTS) in hearing will not be exceeded, or the range to exceedance will be limited to the immediate proximity of the seismic source therefore indicating that shutdown zones of 2 km will be effective in mitigating auditory injury.

- Adopted world leading detection and mitigation measures including:
  - Pre-start surveys.
  - Extended shutdown zones for the seismic source.
  - The use of qualified and experienced MFOs.
  - The deployment of in-water real-time vocalisation detection technologies to improve efficacy of protection measures at night-time and in periods of low visibility.
  - Passive acoustic monitoring operations and operators to improve the efficacy of whale detection to inform management responses.
  - ~~Use~~Contingent use of a spotter aircraft to extend the observation distance for whales to greater than the distance for predicted behavioural disturbance.
- Considered responses received from relevant persons in relation to impacts to threatened and migratory whales have been incorporated into the EP, CGG has considered and addressed these responses, which included objections and claims related to the impact assessment of zooplankton as a source of food for pygmy blue whales, noise impacts on whales including hearing injury, behavioural disturbance and masking, concerns about the accuracy of the underwater acoustic modelling and access to supporting literature used in the evaluation, and that the EP demonstrates that the environmental impacts and risks of the activity to the threatened and migratory whales will be of an acceptable level.
- Comprehensively assessed that anthropogenic noise from the activity will be managed such that any blue whale can continue to utilise biologically important areas without injury and biologically important behaviour can continue and as a result the activity can be managed in a manner that is not inconsistent with the Conservation Management Plan for the Blue Whale.
- Consistent with the Conservation Management Plan for the Southern Right Whale 2011-2021, sought to improve the understanding of what impact anthropogenic noise may have on southern right whale populations by:
  - Assessing anthropogenic noise in key calving areas.
  - Assessing responses of southern right whales to anthropogenic noise.
  - Developed further mitigation measures for noise impacts beyond Policy Statement 2.1.
- Consistent with the National Recovery Plan for the Southern Right Whale:
  - Assessed according to principles of ecological sustainable development to ensure the risk of injury and/or disturbance to Southern Right Whales is minimised.
  - Baseline surveys and monitoring undertaken during activity implementation are conducted in accordance with best practice standards and guidelines to ensure standardised datasets are obtained and suitable to inform environmental management decision making that can reduce the risk of threats to Southern Right Whales.
  - Used current information on species' occurrence, particularly in HCTS, BIAs, and historic high use areas, to inform planning, assessment, and decision-making on marine infrastructure development actions.

Our exhaustive environmental assessments, rigorous impact and risk analyses, and extensive consultations have collectively ensured that all impacts and risks from the activity will remain below an acceptable level. Furthermore, our robust adaptive management approaches provide a structured approach for effectively handling any uncertainties, guaranteeing a dynamic and responsive strategy to environmental stewardship.

12 Revision History

Version	Date of Revision	Author/Reviewer	Summary of Changes
0.0	12 December 2023	MS/SR/LB/AE	Document drafted.
0.1	22 December 2023	LT/PR	Review by CGG
1	4 January 2024	MS	Updated and reviewed, published for public comment.
2	9 June 2024	AH/CT/MS	Updated following public comment. Incorporated passage of time amendments.
3	11 November 2024	MS/CT/AH/RH	Restructured document based on NOPSEMA feedback
4	17 April 2025	MS/CT/RH/AH	Updated following response to NOPSEMA assessment and OMR decision.

List of Tables

List of Figures

Annex 1 – Presence / Absence Analysis for Species within the Environment Planning Area

		Non-peak period - activity known to occur in lower densities/concentrations, or sporadically, or may occur												
		Peak period - activity known to occur												
Presence / Absence Table	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**		**Oct**	**Nov**		**Dec**
Marine Mammals														
Whales														
Threatened Species														
Blue Whale														
Southern Right Whale					Nearest coastal aggregation areas are in southwest Victoria (Warrnambool)									
Humpback Whale				orthern Migrati								Southern Migration		
Fin Whale					General migration window for movement out of sub polar waters to temp									
Sei Whale					General migration window for movement out of sub polar waters to temp									
Non-Threatened Species														
Minke Whale									Based off known migration movements					
Antarctic Minke Whale			*** half of March											
Pygmy Right Whale														
Short-finned Pilot Whale					Prefers open ocean waters, no migratory patterns known									
Long-finned Pilot Whale	Based off records of strandings													
Pygmy Sperm Whale					Prefers offshore waters with 2 sightings in Australian waters, insufficient to assess potential presence									
Dwarf Sperm Whale					Prefers deep water and no sightings in Victoria									
Andrew's Beaked Whale									Based off known records in Victoria					
Blainville's Beaked Whale					One stranding recorded in Victoria, insufficient to assess potential presence									
Strap-toothed Beaked Whale	Based on strandings occurring during Summer-Autumn													
Gray's Beaked Whale	Most strandings occur during December-April													
Hector's Beaked Whale					No records from Victoria									
True's Beaked Whale					Prefers open ocean waters, no migratory patterns known									
Sperm Whale					Window of northward movement. More likely in WA									
Cuvier's Beaked Whale	Most strandings occur from January-July													
Arnoux's Beaked Whale					Prefers slope and escarpment environments									
Dolphins														
Common Dolphin	Assumed present year round													
Risso's Dolphin	Assumed present year round													
Dusky Dolphin				Based off inshore seasonal movements during cooler months										
Southern Right Whale Dolphin					Prefers deep water and the outer edge of continental shelf									
Killer Whale				More likely during winter months, summer months spent further south										
False Killer Whale					Suggested period of migration to coastal/continental shelf waters									
Indian Ocean Bottlenose Dolphin	Assumed present year round													
Bottlenose Dolphin														
Seals														
Australian Fur-seal		Females feeding pups				Northern Migration				Weanin	Weaning/ Breeding			
New Zealand Fur-seal														
Invertebrates of Commercial Importance														
Southern Rock Lobster			Mating						Spawning					
Giant Crab						Breeding Season					Spawning			
Gould's Squid														
Fish - EPBC Listed														
Blue Grenadier	Assumed year round presence					Spawning winter and early spring								
Australian Grayling	Spawning however occurs in freshwater								Assumed presence					
Blue Warehou	Assumed year round presence					Spawning winter and early spring								
Eastern School Whiting	Spawning- (Tasmania: late Summer)			Year round presence with largest catches March- July										
Elephantfish		Spawning	Assumed year round presence											
Ocean Perch	Assumed year round presence							Spawning Winter to early Summer						
Orange Roughy	Assumed year round presence						Spawning (not every year)							
Pink Ling	Assumed year round presence								Spawning - late winter and spring					
Tiger Flathead	Spawning													
White Shark- migration	Moving north along the east coast													South
White Shark- congregation of juvenlies														
Sawshark	Assumed presence year round					Breeding/ Pups are born (12 mth gestation)								
Schoolshark			Assumed presence year round (transitory)						Breeding/ Pups are born (mainly December and January)					
Gummy Shark	Breeding/ pups born (11-12 mth gestation)		Assumed presence year round											
Turtles - EPBC Listed														
Loggerhead Turtle														
Green Turtle	Low likelihood of presence of turtles in Victoria. No known turtle breeding or nesting sites in Victoria													
Leatherback Turtle														

		Non-peak period - activity known to occur in lower densities/concentrations, or sporadically, or may occur
		Peak period - activity known to occur

Presence / Absence Table	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep		Oct	Nov	Dec
Commercial Fisheries													
See commercial fisheries section 4.7													
Victorian Fisheries													
Giant Crab - Fishery open (males)													
Giant Crab - Fishery open (females)													
Giant Crab - Highest catch rates (CPUE)													
Southern Rock Lobster - Fishery open (males)													
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Tasmanian Fisheries													
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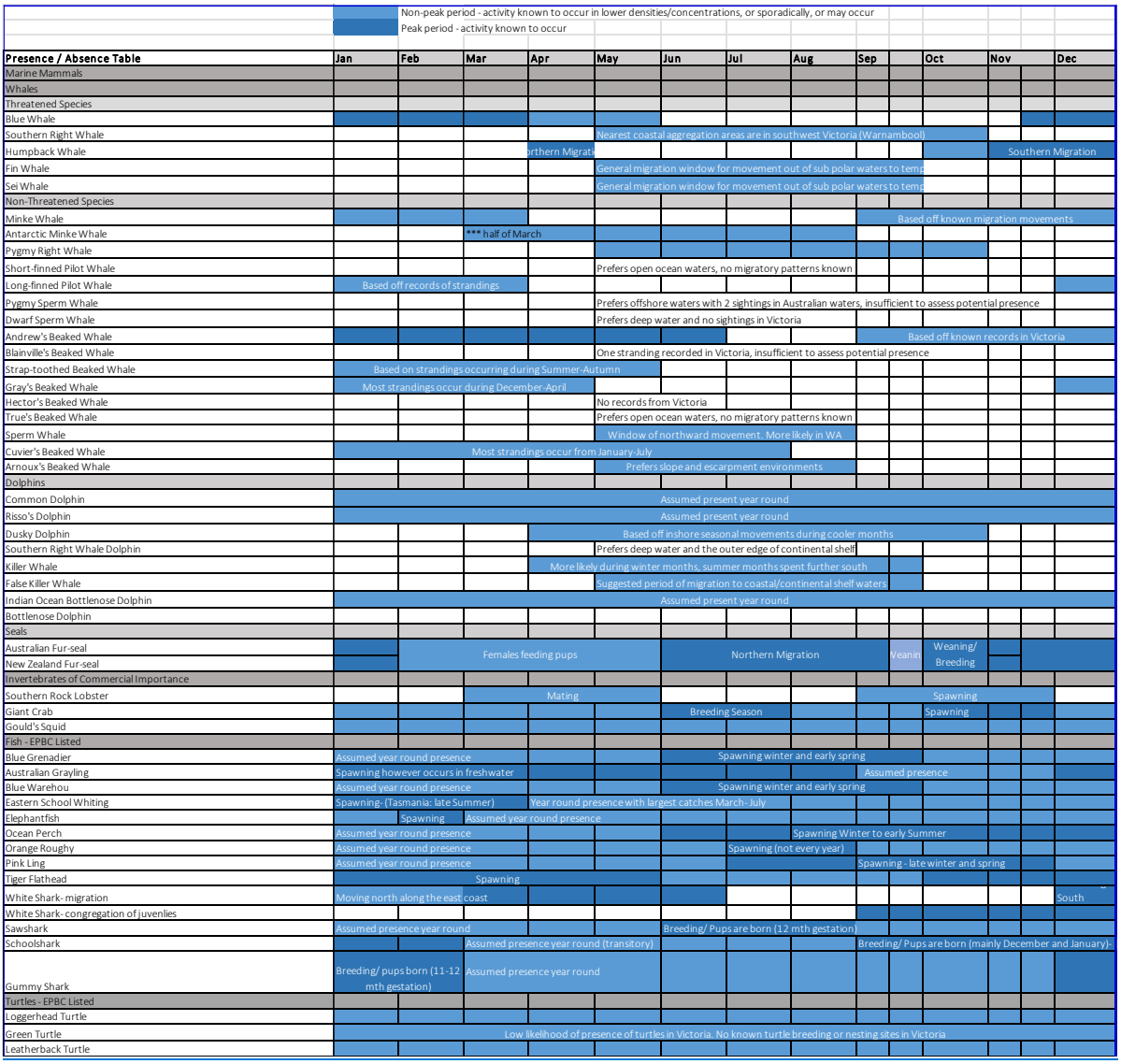
Southern Rock Lobster - Highest catch rates (CPUE)													
Plankton (General)													
The Bonney Upwelling	Sustained		Quiescent	Downwelling								Onset of upwelling	
Western Tasmania Upwelling System		Late austral summer bloom (larger bloom)									Spring bloom		
Birds (migratory seabirds)													
Antipodean Albatross			Fledging	May be foraging								Egg laying austral summer, fl	
Black-browed Albatross				Fledging		Presence			Breeding				
Buller's Albatross Pacific Albatross	Possible presence							Breeding Dec-Oct (New zealand)					
Campbell Albatross	Breeding					Winter presence							
Flesh-footed Shearwater	Breeding & possible presence												
Grey-headed Albatross	Breeds on Macquarie Island, feeds in Southern Ocean												
Northern Giant Petrel	Breeds on subantarctic islands				Most likely presence								
Northern Royal Albatross													
Salvin's Albatross	No breeding colonies in Aus												
Shy Albatross	Presence			Fledging					Eggs laid (breeding Albatross island NW Tas)				
Sooty Albatross			Observed presence										
Sooty Shearwater	No breeding colonies in Aus												
Southern Giant-Petrel, Southern Giant Petrel	Breeds on subantarctic islands												
Southern Royal Albatross	No breeding colonies in Aus												
Wandering Albatross	Fledging		Possible presence. Feeds in Southern Ocean										Eggs laid- Bre
White-capped Albatross	No breeding colonies in Aus												
Birds (Resident seabirds)													
Australian Fairy Tern	Breeding		Possible presence			Less frequent during Winter							
Blue Petrel	Breeds on subantarctic islands												
Common Diving-petrel													
Fairy Prion													
Fairy Prion (southern)													
Gould's Petrel	Breeds on NSW	Breeds on NSW islands											
Great Skua													
Indian Yellow-nosed Albatross			Fledging			Most likely presence in Aus			Eggs laid				
Northern Buller's Albatross	No breeding colonies in Aus												
Short-tailed Shearwater	Foraging (BIA's) + breeding					Migrate Northern hemsiphere							
Soft-plumaged Petrel													
Wedge-tailed Shearwater	Foraging (BIA) + breeding season Sep- May												
White-bellied Storm-Petrel (Tasman Sea)													
White-faced Storm-petrel		Fledging							Return to colonies			Presence	Eggs laid
Migratory Shorebirds													
Common Sandpiper													
Curlew Sandpiper	Presence												
Eastern Curlew, Far Eastern Curlew	Possible presence												
Hooded Plover (eastern), Eastern Hooded Plover													
Pectoral Sandpiper													
Red Knot	Presence			Breeds in North hemisphere									
Sharp-tailed Sandpiper													
Birds **- Other**													
Orange-bellied Parrot	Breeding		Depart Tas								Arrive in Tas for breeding		
Little Penguin			Year round presence						Breeding season (Sep-Feb)				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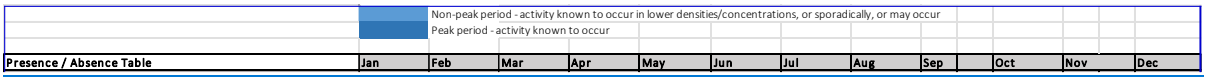
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